UNIVERSITY OF MICHIGAN
MAR 6 1952
MEDICAL LIBRARY

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY FEBRUARY 16 1952

TABLE OF CONTENTS

Rheumatic Diseases in the U.S.A. J. J. R. DUTHIE, M.B., F.R.C.P.Ed. 341
Involution of the Cervix HUGH C. MCLAREN, M.D., F.R.F.P.S. 347
Correction of E.S.R. in Anaemia J. C. F. POOLE, B.M., and G. A. C. SUMMERS, M.B. 353
Cortisone in Idiopathic Steatorrhoea J. BADENOCH, B.M., M.R.C.P. 356
Mercury Nephrosis in Young Children
VERA K. WILSON, M.SC., M. L. THOMSON, M.D., F.R.C.P., and A. HOLZEL, M.D. 358
Fatal Hypokalaemic Alkalosis with Tetany During Liquorice and P.A.S. Therapy
N. J. ROUSSAK, M.B., M.R.C.P. 360
Hazards of Manipulative Treatment in Lumbo-sacral Disk Protrusions
ROBERT HAFNER, F.R.C.S. 361

King George the Sixth 386

MEDICAL MEMORANDA

Prostatic Obstruction and Inguinal Hernia: a New Approach. THOMAS MOORE, M.D., M.S., F.R.C.S. 362
Paralaryngeal Actinomycosis in a Child. D. F. DAVIES, M.B., M.R.C.P. 363

REFRESHER COURSE

Frequency of Micturition. H. P. WINSBURY-WHITE, F.R.C.S. 372

GENERAL ARTICLES AND NEWS

Centenary of "Great Ormond Street." T. TWISTINGTON HIGGINS, O.B.E., M.B., F.R.C.S. 377
International Association of Gerontology and Rapid Progress of Gerontology. V. KORENCHEVSKY, M.D. 375
Scientific Exhibition at Joint Annual Meeting 379
NOVA ET VETERA 380
MEDICAL NOTES IN PARLIAMENT 390
UNIVERSITIES AND COLLEGES 391
MEDICAL NEWS 393
BIRTHS, MARRIAGES, AND DEATHS 395
QUESTIONS AND COMMENTS 395

REPORTS OF SOCIETIES

BRITISH ASSOCIATION OF ALLERGISTS: British Allergists 380

LEADING ARTICLES

King George VI 366
Queen Elizabeth II 367
The Place for Voluntary Work 367

ANNOTATIONS

E.S.R. in Anaemia 369
The Hair 369
Mercury for Children? 370
Funnel Chest 370
Great Ormond Street 371
Scientific Exhibition at the Annual Meeting 371

REVIEWS

The Old and Infirm 364
Textbook of Physiology 364
Elation 364
Textbook of Medicine 364
The Gorilla 365
A Doctor's Stories 365
Venereal Diseases 365

OBITUARY

A. V. J. Russell, M.B. 389
W. H. Pollard, M.B. 389
Max Hartmann, D.Ch., M.D.(Hon.) 389
Graham Renshaw, M.D. 389
J. L. McSweeney, M.B. 389
E. C. Braithwaite, C.B.E., M.S., F.R.C.S.Ed. 389

SUPPLEMENT

For Contents see First Page of Supplement

CORRESPONDENCE

Stellate-ganglion Block. T. H. HOWELL, M.R.C.P.Ed.; J. ALFRED LEE, M.R.C.S. 381
Educating the Public About Cancer. R. W. RAVEN, F.R.C.S., and JOAN GOUGH-THOMAS, M.A. 381
Stomach Tube in Trachea. ERIC COLDREY, F.R.C.S. 382
Vascular Spasm. JOHN SOPHIAN, F.R.C.S. 382
Parkinsonism. OLIVER GARAI, M.R.C.P.; R. O. GILLHESPY, M.D. 382
A Modified Wrist Splint. I. H. J. BOURNE, M.B. 383
Primary Generalized Arthritis. E. N. WARDLE, F.R.C.S. 383
Extensive Resection of Small Intestine. B. E. CRAWFORD STANLEY, F.R.C.S. 383
Pink Disease and Antibiotics. A. S. COOK, M.B. 383
The Nutritional Revolution. Z. A. LEITNER, M.D. 384
Cost of T-piece Anaesthetic Technique. F. F. WADDY, M.B. 384
Congenital Duodenal Obstruction and Mongolism. VICTORIA SMALLPEICE, M.D., and MARY W. COXON, M.B. 384
Shortage of *X*-ray Films. NORMAN P. HENDERSON, M.B. 385
L-*Nor*adrenaline as a Vasoconstrictor. R. GHOSE, M.B. 385
Placing Lymph for Vaccination. P. J. O'BRIEN, M.B. 385
Points from Letters 385

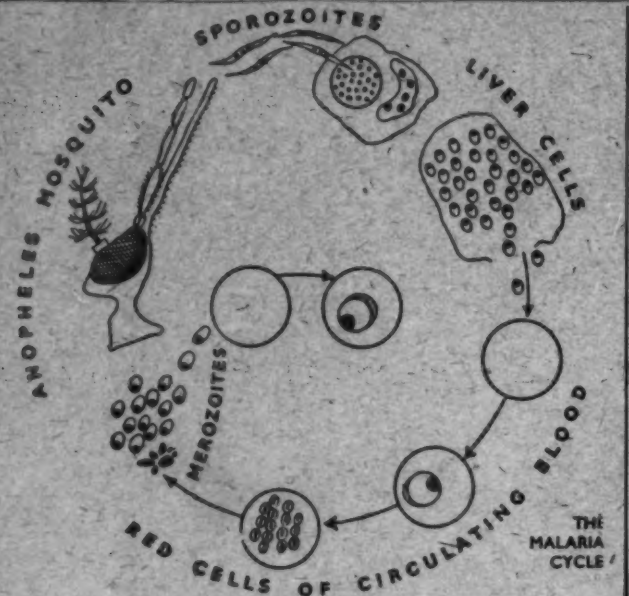
Vital Statistics 391

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4754, WEEKLY, PRICE 2/-

Copyright

REGISTERED AS A NEWSPAPER



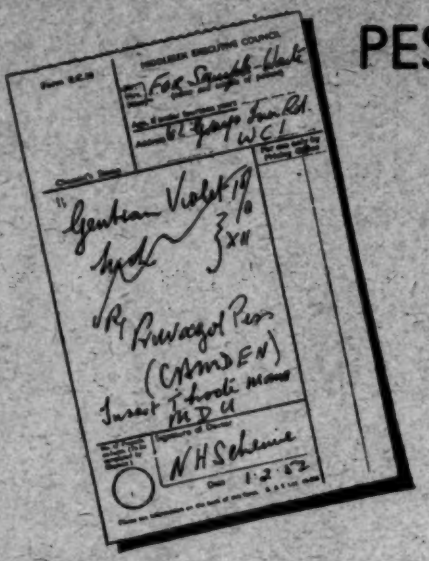
Quinine acts on the blood stages in the life-cycle of the malarial parasite and in spite of recent advances in chemotherapy remains a standard remedy in the treatment of malaria.

HOWARDS OF ILFORD

Makers of Quinine Salts since 1823

HOWARDS & SONS LTD. · ILFORD NEAR LONDON

PRUVAGOL PESSARIES



the modern answer to Gentian Violet in non-specific cervicitis

More and more doctors are prescribing PRUVAGOL pessaries to replace the old-fashioned treatment with Gentian Violet.
PRUVAGOL pessaries are suitable in all cases which respond to Gentian Violet and have the advantage of being non-staining and easy for the patient to apply herself.
Leading gynaecologists have proved that PRUVAGOL will clear up the clinical condition of non-specific cervicitis, even of many years' duration and resistant to other forms of treatment, with only a few applications.
Pessaries in packings of 12, 50, and 100; also cream in tubes with applicators and special hospital packs.

Literature and samples available to the Medical Profession

CAMDEN CHEMICAL CO., LTD.,
61 GRAY'S INN ROAD, LONDON, W.C.1

ZŌPLA

STRAPPING

Zōpla Strapping is a first class product for surgical use. Very strong cloths, the mass is powerfully adhesive. White and Flesh Cloths, also on Elastic Cloth.

WHITE FELT

Zōpla on White Felt is very popular for padding and protective purposes. Does not harden in use.

ZŌPLA-BAND

Zōpla-Band, Elastic Adhesive Bandage, ideal where elasticity is essential.

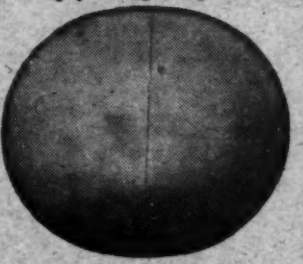
MANUFACTURED BY
LESLIES LTD
EST 1823
HIGHAM HILL RD
WALTHAMSTOW
LONDON, E.17

SURGICAL SERVICE
SALTAIR

SALT AND SON LTD

THE "SALTAIR" ARTIFICIAL BREAST

—the obvious solution of the psychological problem which frequently follows breast amputation. It restores the normal figure line, banishes self-consciousness, encourages resumption of normal activities. Can be worn while bathing, as it retains its shape when wet and can be easily dried. Available in the "Saltair" Brassiere or separately for sewing into patient's own foundation garment.



Front View

BRASSIERES are also available for use in mastitis. Particulars of all styles available on application.

Back View (uncovered)

BIRMINGHAM, 2

BRITISH MEDICAL JOURNAL

LONDON SATURDAY FEBRUARY 16 1952

RHEUMATIC DISEASES IN THE U.S.A.*

BY

J. J. R. DUTHIE, M.B., F.R.C.P.Ed.

Senior Lecturer in Rheumatic Diseases, Department of Medicine, University of Edinburgh

Clinics and Hospital Facilities for Rheumatic Diseases

The publication in 1949 of a survey of research on rheumatic diseases in the United States by a committee of the National Research Council provided ample evidence that the rheumatic diseases constituted a major social and economic problem. In its final report the committee says that the most common cause of chronic illness in the United States is the group of rheumatic diseases. They estimated that some 7,500,000 Americans suffer from arthritis or some other form of rheumatism, and that 30,000,000 people, counting the families of arthritics, are concerned with the medical, social, and economic aspects of this problem. In 1939, 97,200,000 days of work were lost as a result of rheumatism, amounting to a financial loss of $500,000,000 a year. The estimated yearly cost of medical care was $100,000,000.

In 1949 there were only 65 specially endowed beds for arthritic patients in the United States as opposed to 100,000 free beds for patients suffering from tuberculosis. There would appear to have been little change in the position since the time of the committee's report. It was found that in the majority of hospitals visited clinics have been established, staffed by physicians with a special interest in rheumatic diseases, but few beds are available for patients in need of hospital care. As a rule patients are referred to these clinics from the medical out-patient department or from the medical and surgical services of the hospital for consultation. A proportion remain under the care of the clinic for treatment, the remainder being returned to the referring service. In the case of patients requiring in-patient care, admission to beds in the general medical wards is arranged, and treatment is carried out along the lines indicated by the physician in charge of the rheumatic clinic. Responsibility for these cases, however, is borne by the visiting physician to whose ward they have been admitted.

Few of the physicians who have made a special study of rheumatic diseases have direct charge of beds. This arrangement arises from the belief held by most physicians in America that the chronic rheumatic diseases form an integral part of the field of general medicine, and that their segregation in special wards or units would be a retrograde step, leading to undue specialization on the part of doctors in charge of such units, to their detriment as general physicians. Experience in Britain would suggest that from the point of view of the arthritic patient there is a real need for a limited number of such special units, where the problems of treatment can be studied and research carried on under unified control. It must be borne in mind, however, that the development of such units in America presents a much more difficult problem on account of the high cost of hospital care and the limited number of free beds. In a number of the teaching hospitals State grants are available which enable selected patients to be admitted for long-term study and treatment. Twenty such State beds are available in the Massachusetts General Hospital, Boston, in the arthritis service directed by Dr. Walter Bauer.

An exception to the general rule is the Robert Breck Brigham Hospital, Boston, where some 30 beds are available in the public wards for rheumatic patients. Even in this specially endowed hospital, rising costs have led to a reduction in the number of beds, and there are few non-paying patients even in the public wards. Application for admission to this hospital is made by the patient's own doctor, who gives details of the clinical and financial status of the patient. Patients are followed up after discharge in home service clinics run by the eight physicians on the visiting staff. This hospital provides a very complete service for rheumatic patients, including orthopaedic and surgical care, and it appears to be the only institution of its kind in America.

Arthritis and Rheumatism Foundation

Mention must be made at this point of the Arthritis and Rheumatism Foundation, which was incorporated in 1948 with the following purposes: "To formulate and carry out a national program of research and education in the rheumatic diseases in order to discover the causes and to develop methods of prevention. To promote on the local level more effective methods of diagnosis for sufferers, more facilities for treatment and for training physicians in rheumatic diseases. To provide systematic re-training and rehabilitation for those disabled by rheumatic diseases."

By 1950 eighteen Chapters of the Foundation had been organized throughout the nation and appeals for funds successfully launched. In New England considerable progress has been made by the Chapter in organizing

*Report on tour of rheumatic centres in the U.S.A. from May 30 to June 28, 1951. The tour was made possible by a World Health Organization Fellowship.

a programme of information for physicians, in the form of lectures and clinical demonstrations and the distribution of scientific literature; in the award of clinical fellowships to doctors practising in more remote districts to enable them to pursue special studies at a teaching centre for three months to a year; in providing financial support and professional service to arthritis clinics in country districts; and in aiding patients to obtain admission to hospital. The activities of the New England Chapter are guided by a whole-time medical director, who is advised by a medical and scientific committee. If Chapters in other States are meeting with a similar degree of success, the activities of the Arthritis and Rheumatism Foundation will do much to better the lot of sufferers from rheumatism in the States, who might otherwise experience considerable difficulty in obtaining early and adequate treatment.

Interest in Chronic Rheumatism

The advent of cortisone and A.C.T.H. has done much to arouse interest, both lay and medical, in chronic rheumatism in the United States, and considerable sums of money are now available for research. It is felt, however, that, owing to the structure of hospital organization and the rising cost of in-patient treatment in the States, there are too few beds available for severely affected patients requiring more detailed study and prolonged treatment. The administration of cortisone by mouth has proved very effective in the suppression of symptoms even in severely incapacitated patients. Oral cortisone is now available on prescription throughout the country, and it is felt that its indiscriminate use on an out-patient basis may temporarily obscure the need for more adequate provision of hospital accommodation for the rheumatic diseases. The limitations and risks of long-term cortisone therapy will be discussed later, but it may be said at this point that the hopes aroused by the first reports of its use in rheumatoid arthritis, that an effective means of controlling the disease had become available, have not been confirmed by experience gained during the past two years.

In comparing the state of affairs in Britain with that in the United States, it is felt that the development of a limited number of special units in connexion with teaching hospitals and universities under the control of full-time physicians, which is taking place at present in Britain, is on the right lines. In the States there is as yet no evidence that such a policy is likely to be developed, for the reasons given above, although the activities of the Arthritis and Rheumatism Foundation will undoubtedly improve the facilities for the diagnosis and treatment of the rheumatic diseases.

A.C.T.H. and Cortisone in the Rheumatic Diseases

Since the report by Hench and his colleagues in the Mayo Clinic of the dramatic suppression of symptoms following the administration of compound E (cortisone) or adrenocorticotrophic hormone (A.C.T.H.) to patients suffering from rheumatoid arthritis a vast literature on the subject has accumulated. No attempt will be made to review the innumerable papers that have appeared in medical journals since 1949. It will suffice to state that the original claims have been fully substantiated by many workers all over the world. That overdosage effects of greater or lesser significance appear sooner or later in about 50% of cases was made clear by Hench in his original and subsequent papers.

The object of the present inquiry was to ascertain the opinions of experienced physicians who had been using the hormones for the past two years on their ultimate place in the treatment of the rheumatic diseases. This question was discussed in detail with many workers, and, although considerable divergence of opinion exists both on the therapeutic value of A.C.T.H. and cortisone and on the mode of action of the adrenal steroids, an attempt will be made to review the position as fairly as possible.

First, it is universally agreed that neither A.C.T.H. nor cortisone has any curative action in disease, although in certain self-limiting conditions symptoms may apparently be completely suppressed until the disease has run its natural course—for example, in acute rheumatic fever. It is also agreed that, if high doses of either hormone are required for any length of time, overdosage effects will eventually appear. Withdrawal of either hormone is followed in most cases by a return of symptoms. In a smaller proportion of cases cessation of the administration of cortisone is followed by the severe and prolonged "post-cortisone withdrawal syndrome," which will be discussed later. With these general considerations in mind, experience of the use of the hormones in rheumatoid arthritis will be considered in more detail, as a large number of cases have now been studied in those centres where long-term trials have been run. The majority of patients have received cortisone by parenteral injection, or, more recently, by mouth, as the injection of A.C.T.H. four times daily renders its use a much less practical procedure outside hospital.

Long-term Use of Cortisone in Rheumatoid Arthritis

Rheumatoid arthritis varies in its clinical course. In the earlier stages of the disease spontaneous remissions are not uncommon, but most cases relapse and run a subacute or chronic course over many years. The rapid suppression of pain and restoration of mobility and function which followed the administration of cortisone demonstrated for the first time that symptoms could be effectively controlled even in the active stages of the disease. It was natural to think that a really effective method of treatment had become available in a disease which had previously proved singularly resistant to all forms of therapy. Experience has shown, however, that various overdosage effects may complicate the picture during prolonged administration of cortisone. Their incidence is high when the daily dose is 100 mg. or more. Under 50 mg. a day these effects become much less common. Unfortunately, only a small proportion of patients derive significant benefit in the lower dose range (25–50 mg. daily).

In most of the American series of cases some 50% have shown side-effects of one kind or another. The significance of these effects varies. Some are of little importance and are readily accepted by patients for a time without complaint—for example, mild oedema due to salt retention, rounding of the face, increased hair growth, striae, acne, disturbance of menstruation, nervousness, mild depression, headaches, dizziness, blurring of vision, tachycardia, exhaustion, insomnia, obesity due to increased appetite. In long-term administration, however, the persistence of one or more of these minor effects may so disturb the patient as to necessitate withdrawal of the hormone. Other effects are more serious. Signs of intercurrent infection may be masked. Although there is no clear evidence that cortisone inhibits the production of antibodies, it may lower the resistance of the tissues to invasion by pathogenic organisms and their toxins. This may be directly related to its ability to inhibit or suppress inflammatory reactions which are likely to form an important part of the body's defence mechanism. Cases have been reported in which such inhibition of the symptoms of infection have had serious consequences, and this constitutes one of the real hazards of cortisone therapy.

Activation of quiescent tuberculous lesions has occurred. Massive haemorrhage from the gastro-intestinal tract and perforation of peptic ulcers have been reported from several centres. In older patients fractures of the long bones and collapse of vertebral bodies constitute a real risk. Thrombo-

phlebitis, pulmonary infarction, coronary thrombosis, and major psychotic episodes are among the other less frequent but more serious complications which may occur. In the individual case which has previously been adequately controlled the underlying disease process may become more acute, and symptoms may reappear which necessitate an increase in dose from a safe to a more dangerous level. Warning of such an event may be given by an increase in sedimentation rate or a rise in circulating eosinophils, although this occurs in a fairly high proportion of long-term cases without recurrence of symptoms. In other cases a progression of the damage in the joints has been demonstrated radiologically when symptoms have remained under adequate control. It would appear, therefore, that, although pain and stiffness may be abolished with a corresponding increase in functional activity, the disease process may not be completely arrested. Under these circumstances increased function, unrestrained by pain, may cause further articular damage, the effects of which may be appreciated only at a later date.

Complications of Cortisone Withdrawal

If the administration of cortisone has to be stopped for any of the reasons given, or because of financial considerations, a significant proportion of cases suffer from what has come to be described as the "cortisone withdrawal syndrome." Symptoms may appear within a few days of withdrawal or be delayed for a week or two. These patients complain of profound weakness and exhaustion, generalized aching pain and stiffness in joints and muscles—no longer relieved by the usual doses of analgesics, made worse by activity and relieved by sleep—anorexia, mental depression, and weight loss. Similar symptoms occur after partial adrenalectomy in Cushing's disease, but do not appear to be directly related to suppression of the adrenal cortex. The electrolyte pattern may be normal and the response to A.C.T.H. adequate long before symptoms disappear, which may be a matter of weeks or even months. Excretion of 11-oxysteroids may be within the normal range. A possible explanation may be that the tissues become conditioned to a high level of circulating steroids, and symptoms arise as a result of a relative deficiency. This view is confirmed to some extent by the fact that withdrawal symptoms rarely appear unless cortisone has been given for several months. When this syndrome is accompanied by an acute exacerbation of the rheumatoid process the adverse effect on the patient's physical and mental condition may be very severe.

A much rarer complication of cortisone withdrawal has been the appearance, in several cases of rheumatoid arthritis, of the signs and symptoms of disseminated lupus erythematosus or periarteritis nodosa. None of these cases have as yet been reported in the literature, but several have been examined personally, and the case records of others have been studied. This may be further evidence in support of the possibility that in certain instances cortisone may render the tissues more vulnerable to some unknown tissue-damaging agent which may be present in the collagen group of diseases. Too much significance should not be attached to these clinical observations at this stage, but certain experimental evidence would seem to point in the same direction.

A Conservative Attitude

The accumulated experience of the use of cortisone in rheumatoid arthritis during the past two years in America has led physicians to adopt a much more conservative attitude towards its routine employment. It is no longer regarded as a substitute for other forms of treatment. It has been found that only in about one-third of the patients started on treatment can a useful suppressive effect be maintained at a dose level which causes no undue disturbance. Complete suppression of symptoms is no longer aimed at. The dose is adjusted to control pain and stiffness to an extent which will enable a reasonable functional level to be maintained. The hormone is used as an adjunct to other forms of treatment which by themselves have failed to restore a useful degree of function. The basic regime of general supportive measures, physiotherapy, gold, and rest splints is tried for several months before cortisone is prescribed, and is continued along with cortisone. The presence of significant articular damage will limit the value of the hormone, and preference is shown for early cases in which the pathology is still potentially reversible and in which a smaller dose will suffice.

The high initial suppressive doses (200–300 mg. daily) are no longer used in many centres, including the Mayo Clinic, because it has been found that patients who have experienced complete relief in the early stages of treatment find it difficult to accept even a partial return of symptoms when the dose is lowered to a safe maintenance level. This has led to difficulty in controlling the dose level in outpatients, who may occasionally obtain additional supplies at high cost from black-market sources. The disappearance of the initial euphoria may also cause psychological disturbance both in the patient and in his relatives. The more general practice is to start with between 50 and 75 mg. daily and adjust the dose up or down during the first weeks of treatment. In those patients in whom the useful dose is unduly high, treatment can be stopped before troublesome side-effects appear. Many methods of administration have been tried—intermittent and continuous courses of cortisone alone, cortisone combined in various ways with A.C.T.H., both continuous and intermittent, reduction of the frequency of administration to once, twice, or thrice weekly, low continuous maintenance dose with occasional booster doses, and so on, but no technique has been evolved to date by which satisfactory control can be maintained in all cases without side-effects. Individuals vary widely in their requirements, and alterations in dose may often be necessary in the same patient.

Precautions in Use

Oral cortisone is now the most commonly used form. Rapid absorption from the alimentary tract takes place, and tablets (25 mg.) are given three or four times a day, preferably after meals ; otherwise the rapidity of absorption may cause nervousness and inability to concentrate. The dose by mouth is generally the same as that given by intramuscular injection, although in a few patients more is required to produce the same effect by the oral route as was previously obtained by injection. Cortisone is now available in a form which can be given by intravenous injection, and trials of this preparation are under way at the present time. It was hoped that, given by this route, the effect might be more prolonged. These hopes have not been fulfilled. The therapeutic effect is good, but is not sustained.

Cortisone has been given in combination with various other substances, such as gold, para-aminobenzoic acid, ascorbic acid, insulin, oestrogens, and testosterone. No definite conclusion can be reached at the present time, but on the whole such combinations have been disappointing. Claims have been made on behalf of insulin and para-aminobenzoic acid, but these require confirmation. The administration of oestrogens may minimize side-effects, especially in post-menopausal women. Negative nitrogen balance can be corrected by testosterone, but this is seldom necessary in patients who are not on a restricted diet. Restriction of salt and the administration of potassium chloride may correct disturbances of the electrolytic balance. Antibiotics should be used in adequate doses when infection is suspected in a patient receiving cortisone. These various precautions, combined with close clinical supervision, render the use of cortisone less hazardous, but it has become clear that the use of the hormone in the long-term control of the symptoms of rheumatoid arthritis is not as yet a practical procedure. The approach must still be experimental, as has been repeatedly emphasized by Dr. Philip Hench.

If further evidence be produced to show that its effect is only to suppress symptoms, leaving the underlying disease process unchecked, then the attitude of the medical profes-

sion towards its use in inflammatory diseases of unknown aetiology may have to be revised. In rheumatoid arthritis in particular, in which marked increase in the functional use of the affected joints follows the administration of cortisone, the possibility that articular damage may be increased rather than reduced must receive careful consideration. The answer to this question can come only from detailed follow-up studies of patients given cortisone over long periods.

Some observers had noted the fact that prolonged remission tended to occur most often in those patients who had received high doses. On this basis the effect of 500 mg. of cortisone daily has been tried on a number of cases for periods of 14–30 days. The results in terms of duration of remission following treatment have been encouraging, but all patients have eventually relapsed, and it is very doubtful if such high doses are justifiable unless clear evidence is obtained that there has been induced a fundamental alteration in the course of the disease.

The answers to many of the problems discussed will come from the continuation of the carefully controlled studies which have been going on in America during the past two years, and for a shorter period and on a smaller scale in Britain.

Short-term Use of Cortisone

Cortisone can be given in effective doses over short periods without undue risk, and in certain circumstances such a use of the hormone may serve a valuable purpose in rheumatoid arthritis. In severely ill bedridden patients running a progressively downhill course, and where the disease cannot be controlled by other means, cortisone may be used to reduce pain and spasm sufficiently to allow other forms of treatment to be applied more effectively. Deformities due to muscle spasm may be corrected and the position maintained by splints after cortisone is stopped.

Where deformities have developed owing to soft-tissue contractures, cortisone may render their correction by manipulation easier and damp down the flare which sometimes follows this procedure. Cortisone may be similarly useful when orthopaedic surgery is indicated in more advanced cases. Synovial inflammation and congestion can be lessened. Post-operative complications are reduced by the fact that physical methods of treatment can be applied early. Wound-healing is not significantly delayed by the doses required to secure these effects. Antibiotics are used routinely in these cases, and wounds are carefully watched for signs of infection.

Short courses of cortisone may thus prove a useful aid in the rehabilitation of crippled patients.

Intra-articular Injection.—That cortisone can act when applied locally has been clearly demonstrated in inflammatory conditions of the eye. Suppression of pain and swelling has followed its injection into the affected joints in rheumatoid arthritis: 25–50 mg. of cortisone acetate suspension has been used. The beneficial effect lasts four to five days on an average, but may be maintained in isolated cases for two to three weeks. Unfortunately, repeated injections appear to cause irritation and the joint tends to deteriorate. Compound F has proved much more satisfactory for this purpose. Mention will be made of this later.

Compound F.—In recent months increasing amounts of compound F have become available in the States for clinical trial. Up to date, it appears that there is no fundamental difference in the clinical effects of E and F. Occasionally it has been found that more F is required than E to produce the same effect, but this is by no means always the case. Side-effects are the same. Enough experience has not yet been gained to reach more than tentative conclusions regarding the value of compound F as compared with E when given by injection or by mouth, but for local injection into joints compound F seems much more satisfactory. Repeated injections can apparently be given without ill effect, with satisfactory suppression of local symptoms, and with no effects due to absorption from the joint. This method of treatment may prove of real value, especially in cases crippled by pain and swelling in the weight-bearing joints. A weekly injection of 25–50 mg. is adequate in most cases. Much more experience is required before the real value of this mode of treatment can be assessed, but the preliminary results are encouraging.

A.C.T.H in Rheumatoid Arthritis

From the therapeutic point of view, the action of A.C.T.H. in rheumatoid arthritis is similar to that of cortisone. The cortex of the adrenal gland is stimulated to produce large amounts of steroid hormone, probably compound F. A.C.T.H. is quickly destroyed, and to maintain its effect injections, subcutaneous or intramuscular, must be given every four to six hours. Attempts to produce the hormone in a vehicle which would prolong the time of absorption have not yet been completely successful. In several American clinics patients or their relatives are taught to give the injections at home, but abscesses often develop, and may remain unsuspected because of inhibition of the normal inflammatory reaction. These abscesses may be very slow to heal. More recently A.C.T.H. has been given by slow intravenous drip over a period of 8–12 hours (20–50 mg. in a pint (570 ml.) of saline). This method of administration, possible only in hospital, is more economical of material and is said to produce maximal adrenal stimulation. It was hoped that more prolonged remission of symptoms might follow, but experience to date has not been very promising in arthritis. Patients have relapsed within a few days of the cessation of daily intravenous A.C.T.H. given for two to three weeks.

Side-effects are similar to those which occur during the administration of cortisone, but there is a greater tendency for salt retention and potassium loss to occur. Clinicians have noted considerable differences in potency between batches, although there has been little variation in the results of the ascorbic-acid-depletion test of Sayers and Sayers. It may be that this test is not a reliable guide to the effectiveness of A.C.T.H. in the clinical field. These variations and the necessity for several injections daily have limited the use of A.C.T.H. in long-term treatment of rheumatoid arthritis. Suppression of symptoms is attained more quickly by A.C.T.H., and where the rapid effect is required A.C.T.H. may be preferred to cortisone. These circumstances will rarely arise in rheumatoid arthritis, but may be important in more acute diseases such as rheumatic fever. Astwood, in Boston, has evolved methods for obtaining a much purer form of A.C.T.H., and he states that some patients can be maintained in remission by a total daily amount of about 1 mg. given in three doses. Possible future developments in the use of A.C.T.H. may depend upon the availability of purer forms, prepared as long-acting substances which will reduce the number of injections required. In general the factors limiting the long-continued use of cortisone are also applicable to A.C.T.H. For short-term administration, where a rapid suppression of symptoms is the main object, A.C.T.H. is the more suitable of the two.

Research

To a person from Britain visiting centres of research in the United States the first impression is one of awe at the scale on which modern techniques are being applied to the study of basic problems in health and disease. In many university centres large laboratory buildings have been built since the war, or are in process of erection. All the basic sciences are represented in these research institutes. Equipment is on the most lavish scale, and personnel are of the highest calibre. The policy in regard to clinical research varies. In some centres the laboratories are primarily devoted to research on clinical material. In others fundamental research is given the first priority. In the latter it is felt that if the individual worker is left entirely free to pursue his basic studies there is a sufficiently strong possibility that discoveries will be made which will illuminate problems in the clinical field.

The direction of research may be in the hands of the pure scientist with an interest in medical problems, or in those of a doctor with additional scientific training. This dual approach will be fruitful in bridging the gap so commonly present between clinical and basic research. On the other hand, modern scientific techniques have become so exacting, and equipment so costly, that there is a real danger of the young scientist, whether he be a doctor of medicine or not, becoming tied to a narrow and possibly unproductive line of investigation which leaves him little time or opportunity for original thought. As someone has said, learning the technique of electron microscopy is like catching a bull by the tail. The danger that the necessity for acquiring difficult techniques may exact too great a toll on young research workers is more real in America than in Britain, where finance places distinct limits on the amount of apparatus available.

This problem has been met to a certain extent in the States by training technicians to a high degree of competence and paying salaries of an order appropriate to their skill; but this solution is only a partial one, and tends to produce an undue reliance on laboratory results reported by technicians who have no knowledge of their significance and who are not always fully aware of the limitations of the methods they have been trained to use. This point is well illustrated in connexion with the published results of work on urinary steroid excretion. The methods used in different laboratories differ fundamentally, and in actual fact no reliable techniques have as yet become available in this field, although a perusal of literature gives rise to the impression that estimations of 11-oxysteroids, 17-ketosteroids, etc., are now a matter of routine in many centres. These criticisms are of a very general nature and are not intended to detract in any way from the value of the vast amount of useful work going on in American laboratories and research institutes.

It is not intended to review in detail the work of individual groups, but merely to survey the general trend of research in the field of the rheumatic and allied diseases in America, within the limits of what can be learnt from a short visit.

Mode of Action of the Adrenal Steroids in Rheumatic Diseases

It is an undoubted fact that experience in the use of A.C.T.H. and cortisone in the clinical field has far outrun the advance in knowledge of their mode of action in the rheumatic diseases. It is a reflection of the difficulty of the problem that two years' intensive research in many centres all over the world has shed very little light on the fundamental mechanism whereby adequate amounts of the steroid hormones, whether exogenous in the form of compounds E and F, or endogenously produced by stimulation of the adrenal cortex, can largely suppress the manifestations of the disease process. The hope that a study of the action of these hormones would lead to an unravelling of the aetiological problems of the rheumatic diseases has not as yet been fulfilled. It has become clear that their action in rheumatic diseases is in no way specific. It seems to depend upon a suppression of the inflammatory process, and it has been shown that inflammation arising from many diverse agents can be similarly reduced. In other words, the action of the adrenal steroids in this respect seems to depend on a reduction of tissue reaction to injury, and bears no apparent relationship to the nature or origin of the agent responsible.

This anti-inflammatory effect can apparently be dissociated from most of the other known effects on the physiological processes of the body. It does not depend on the changes induced in electrolyte pattern, carbohydrate, protein, or fat metabolism. There is no evidence that the rheumatic diseases are associated with any deficiency in adrenal hormones. In fact, evidence of hormonal excess usually becomes evident before symptoms are adequately controlled. The action of the cortical hormones that appear to be important in relation to their therapeutic effect is their apparent ability to inhibit or damp down the reactivity of mesenchymal tissue, which is the site of the primary injury in the rheumatic group of diseases. The fact that they are also effective in allergic or hyperimmune states suggests that one possible mode of action may be through their effect on antibody–antigen reactions. No clear evidence that such reactions are involved in the pathogenesis of rheumatic disease has yet become available.

In summing up, it can be said that, although a vast amount of knowledge of the action of the adrenal steroids on the physiology of the body has been gained since A.C.T.H. and cortisone became available, we are as yet completely ignorant of how they act in disease. Certain lines of investigation may prove productive, and some of these are discussed below in a little more detail.

Action on Immune Response

A good deal of the evidence regarding the action of the adrenal steroids on immune response is conflicting. Early work suggested that circulating antibody was increased by cortisone, by release from lymphoid tissue undergoing involution. More recent work has failed to confirm these earlier results. It seems that antibody production may be diminished under certain circumstances, but the union of antibody and antigen is not prevented. A further possibility is that the action of some product of the union of antigen and antibody is inhibited. A possibility that is in the minds of some workers is that proteolytic enzyme systems may be activated by antibody–antigen union, and that the action of the steroid hormones is to inhibit this activation. The whole subject is under intensive study in a number of laboratories and, although some interesting results have been the subject of preliminary reports, no definite proof of any of the theories outlined has as yet been obtained.

Action on Mesenchymal Tissue

It is well known that in pathological states of hyperadrenalism striae appear and wound-healing is delayed. As some degree of hyperadrenalism appears to be necessary to induce remission in the collagen group of diseases, investigation of the effect of A.C.T.H. and cortisone on connective tissue has been undertaken by a number of workers. Satisfactory evidence that fibroblastic activity is markedly depressed has been obtained in experimental animals. This so-called depression of reactivity to injury might be related to the suppression of symptoms of inflammation. On the other hand, wounds have healed satisfactorily in patients receiving doses of cortisone adequate to maintain them in good clinical remission. Cortisone has been used to facilitate orthopaedic surgery in rheumatoid arthritis without causing undue delay in wound-healing.

Little change in the histology of nodules excised before and during cortisone administration has been noted beyond a reduction in cellular infiltration. It is not yet clear, therefore, whether the action of steroids in depressing the reactivity of connective tissue to injury is in fact the explanation of their action in diseases of the collagen group.

Research into the structure of collagen, ground substance, and basement membranes by electron microscopy and microchemical methods is now beginning to provide information about the function and relationship of these components of mesenchyme. Increased knowledge of their chemical structure and physical properties, together with detailed studies of the changes induced by the steroid hormones, may well provide information of fundamental importance to the elucidation of the mode of action of cortisone in the collagen diseases. Due credit must be given to the scientists who are at present pursuing this laborious, exacting, and relatively undramatic type of research in many centres in America.

Adrenal Function in Rheumatoid Arthritis

It has already been stated that no unequivocal evidence of adrenal insufficiency has been obtained in patients suffering from rheumatoid arthritis. On the other hand, some

evidence of abnormal adrenal function has been advanced by Dobriner and his colleagues in the Sloan-Kettering Institute, New York. In comparing the steroid-excretion pattern of normals with patients suffering from rheumatoid arthritis, a striking qualitative difference has been demonstrated. Two compounds—17-hydroxy-pregnanolone and 11-hydroxy-etiocholanolone—were present in the urine of the arthritic subjects. The former abnormal metabolite has been demonstrated in cases of adrenal tumours and adrenal virilism. The latter has been found in the urine of patients with neoplastic disease. On this evidence it is tentatively concluded that abnormal function of the adrenal cortex may play a part in the pathogenesis of rheumatoid arthritis. The administration of both A.C.T.H. and cortisone causes these abnormal metabolites to disappear. This suggests the possibility that they may arise, not from an abnormal function of the adrenal cortex, but from an altered metabolism of adrenal steroids in the peripheral tissues. Much more work is necessary before a final conclusion is reached, but the results of further investigations by Dr. Dobriner and his staff will be awaited with the greatest interest.

Selye has advanced the hypothesis that an excessive output of mineralo-corticoids by the adrenal cortex may be of importance in the causation of diseases of the collagen group. He bases his theory on the demonstration in rats sensitized by the removal of one kidney, high salt intake, and D.C.A. of lesions resembling those of nephrosclerosis, periarteritis nodosa, rheumatic fever, and rheumatoid arthritis. In more recent reports he claims to have demonstrated that this suggested adrenal imbalance may be caused by an overproduction of somatotrophin or growth hormone.

No direct evidence of the existence of such a hormonal imbalance has been demonstrated in human patients. If this were correct, the administration of desoxycortone acetate (D.C.A.) to patients suffering from rheumatoid arthritis should make the disease worse. This is not the case. There is no evidence of major alteration in the electrolyte pattern in these patients, and corticosteroid levels in the urine tend to be lower than normal. D.C.A. does not oppose the anti-inflammatory action of cortisone, and stimulation of the adrenal cortex, which might be expected to cause an exacerbation of symptoms, abolishes them as effectively as cortisone. Selye suggests that A.C.T.H. may stimulate the secretion of glucocorticoids while somatotrophin may stimulate the gland to produce mineralo-corticoids, thus explaining the apparent paradox. No satisfactory evidence in support of his contention is as yet available in human subjects.

Further studies of the production and metabolism of the adrenal steroid hormones in health and disease are obviously of the greatest importance for a more complete understanding both of fundamental physiological processes and of their possible role in disease states.

Role of the Spleen

Ungar, working in the rheumatic fever research unit in Chicago, suggests that the spleen may be important as an endocrine organ. He claims that two substances, splenin A and splenin B, are produced by the spleen in certain circumstances. A small amount of splenin A is normally present in the blood, but no splenin B. He believes that splenin A is produced by the action of the adrenal hormones on the spleen and that it is important in the defence mechanism of the body. It probably acts by acceleration of the neutralization of proteolytic enzymes. He states that some of the effects of cortisone are abolished by splenectomy. Splenin B appears in the blood only in disease states, including rheumatic fever and rheumatoid arthritis. Splenin A can be synthesized by the incubation of ascorbic acid and a suspension of spleen tissue, and isolated in a crystalline form.

Ungar postulates that splenin A may be of therapeutic value in rheumatic fever, and clinical trials are being made at the present time. Preliminary results, he states, have been encouraging, and trials on a larger scale await the preparation of a more adequate supply of splenin A, which is now being made commercially. If the anti-inflammatory effect of cortisone depends upon its action in stimulating the production of splenin A, then the undoubted fact that cortisone is effective when applied locally is difficult to explain. It is also true that A.C.T.H. and cortisone produce their effects in patients in whom the spleen has been removed, but a possible explanation might be the development of accessory spleens. Whatever the truth, the results of more extensive clinical trials of splenin A will be of great interest.

Pleuropneumonia-like Organisms in the Collagen Diseases

At the Atlantic City Conference of the American Rheumatism Association a paper was read by Wickelhausen suggesting that organisms of the pleuropneumonia group might play a part, as living antigens, in the aetiology of certain of the collagen diseases. It was claimed that these organisms could be demonstrated in the genito-urinary tract in a high percentage of cases, although they could rarely be recovered from the joints in cases of rheumatoid arthritis. On this basis, clinical trials of the newer antibiotics have been run. "Terramycin" is said to have proved the most effective. The clinical response may be of three types: (1) gradual improvement; (2) reactivation of symptoms after withdrawal of the drug; and (3) severe exacerbation after a single dose—thought to be due to destruction of the organisms, with release of antigenic material. The method of treatment adopted has been to give the antibiotic every three days and to control exacerbations in the intervals with cortisone or albumin, which reduces hypersensitivity. Careful adjustment of the dose of antibiotic is required if the best results are to be obtained.

It was felt at the conference that this report was of considerable interest, but that much further work was required before accepting the idea that the pleuropneumonia-like organisms were in fact the living antigen in collagen diseases. Newer cultural methods have shown these organisms to be present in a high proportion of healthy people, although this does not rule out the possibility that in certain circumstances they may assume a pathogenic role.

Blood Flow in Joints

Hollander and his colleagues in Philadelphia have been investigating the effect of intra-articular injections of compounds E and F on joint temperature, using copper-constantan thermocouples mounted in a needle. Compound F has been found more effective than compound E in causing a fall in temperature, which becomes evident within 24 hours and corresponds in general to a suppression of symptoms in the joint. That this effect is a local one is evidenced by the observation that the temperature in the other knee, used as a control, was unaffected. Such observations on the local changes induced by the adrenal steroids are of undoubted value in reaching an understanding of their mode of action.

Pathogenesis of Gout

Wolfson and his colleagues in Ann Arbor claim to have demonstrated an abnormally low output of 17-ketosteroids in patients suffering from gout, although this disease is most common in males in the absence of any other signs of hypogonadism. They postulate that androgenic function in these patients is maintained by an abnormal male sex hormone, originating from the adrenal cortex. The role of this hormone in the pathogenesis of gout may depend upon its ability to evoke hyperuricaemia. That the action of the hormone is opposed by the glucocorticoid hormones is suggested by the suppression of symptoms by the administration of A.C.T.H., and the precipitation of an acute attack on withdrawal, when the level of glucocorticoids temporarily falls below normal. Attacks of gout not uncommonly follow stress, and Wolfson postulates that the gouty patient

responds inadequately to these situations in terms of 11-oxysteroid output, and a relative deficiency of these hormones follows, preparing the way for the acute attack.

There are a good many theoretical objections to this theory, but such studies of the hormonal pattern in gout may well lead to a better understanding of this disease and provide important information regarding the function of the adrenal steroids.

Chemical Structure of Fibrinoid

Fibrinoid change in connective tissue has been regarded as the characteristic lesion in diseases of the collagen group, thus implying that fibrinoid was in some way derived from collagen or its precursors. Kantor and his associates in New York University have now been able to show by chemical and histological methods that this substance is in fact non-collagenous in origin. This observation may be of considerable importance, as it throws doubt upon the view that changes in the structure of collagen form the basis of the pathological lesions in this group of diseases. This is a good example of how the use of combined chemical and histological techniques may provide more accurate information than more conventional methods. This more dynamic approach to the elucidation of the nature of pathological change is likely to have an increasing application, as histochemical techniques are combined with electron microscopy.

Conclusion

These brief notes on research in the field of rheumatism are far from complete, but may serve to illustrate the diversity of approach and the increasing application of the disciplines of the basic sciences to the solution of problems in the field of medicine. It becomes increasingly obvious that, with advancing knowledge, opportunities for individual research are becoming more limited. The team of scientists, representing many fields of knowledge, has largely replaced the lone worker in the small laboratory. Opportunities for the brilliant individualist still exist, but the co-ordinated activities of a group with the command of many techniques seem likely to contribute more to the store of knowledge in the long run. The place of the clinician in such a team must be clearly defined. There is a tendency at the moment to relegate him to the background along with the patient from whom material for study is obtained. Unless he has additional training in some scientific field, he finds it difficult to get on terms with his laboratory colleagues. It would be unfortunate if this trend were to develop further, as the clinician must ultimately relate new knowledge to the practical problem of applying it to the treatment of disease in the human patient. The clinician must exert himself to grasp at least the principles of scientific methods used in research, and the scientist must unbend enough to make his results and their implications comprehensible to his clinical colleague. Both must consider the best interests of the sick patient when research has produced some new approach to the treatment of his disease.

The Ministry of Health has asked the Liverpool Blood Transfusion Service, together with the Manchester and Cardiff Services, to collaborate with the Medical Research Council in a survey of patients who have received transfusions of irradiated plasma or small-pool plasma, in order to compare the incidence of homologous serum jaundice in the two groups. At present irradiation with ultra-violet light is the most promising method of sterilizing plasma. A control series of cases receiving only blood will also have to be surveyed. It is proposed to provide each hospital in the region with either irradiated or small-pool plasma, but not with both, and to follow up patients who have received either after a period of five months. The survey will last three years.

THE INVOLUTION OF THE CERVIX*

BY

HUGH C. McLAREN, M.D., F.R.F.P.S. F.R.C.S.Ed., M.R.C.O.G.

Professor of Obstetrics and Gynaecology, University of Birmingham

Are post-partum erosions normal in the involuting cervix and do they persist if untreated? The question is important, since the common treatment of erosions after delivery rests on the assumption that they are pathological and give rise to symptoms such as leucorrhoea and backache (Browne, 1946).

Clinically, the cervix often appears to have reached its nulliparous state six weeks after delivery, but a biopsy will show that the changes of pregnancy are still obvious—for example, the stroma is cellular, vascular, and oedematous, while the glands are so numerous as to appear as a honeycomb (Stieve, 1927; Fluhmann, 1948; Murphy and Herbut, 1950). In other words, from a histological point of view the cervix, six weeks after delivery, is still in a pregnant state, although involution is proceeding.

In this clinical and histological study, observations on the post-partum cervix were followed by observations on post-natal erosions which were allowed to heal without treatment. The object was to ascertain if the process of involution in cases with erosion differed materially from the normal post-partum case.

Methods of Investigation

A total of 262 patients were investigated: 121 with post-partum erosions and 141 without post-partum erosions (controls).

The following investigations were carried out approximately six weeks after delivery. First, in every case I completed a standard case-sheet with a detailed description of symptoms such as leucorrhoea and backache. Vaginal smears were then taken and a "Cusco" speculum was passed. A diagram was made outlining the portio and giving details of the amount and type of cervical mucus. The mucous plug was then removed and an endocervical specimen of mucus was taken by an ordinary throat swab for microscopy. The physical properties of the cervical mucus were observed by attempting to draw the specimen out into threads (*Spinnbarrkeit*). A laryngeal punch was then used to obtain squamo-columnar biopsies, and finally the bleeding area was treated with a nasal-wire cautery.

An attempt was made to correlate *simple* erosions with symptoms such as backache and leucorrhoea, and therefore complications such as parametritis and fixed retroversion of the uterus were excluded by bimanual examination.

Clinical Results

1. Backache Six Weeks After Delivery

	Erosions	Controls
Total number of patients	121	141
Backache present	43 (35%)	26 (18%)
Inadequate information	14	38

Backache was present in 35% of patients with erosions and in 18% of those without erosions. It became obvious after taking a careful history from the patient and examining her back, testing its mobility, and so on, that the cervix could

*Preliminary report, read before the Birmingham and Midland Obstetrical and Gynaecological Society, Nottingham, October 13, 1950.

not possibly be the source of the pain. If the patient, for instance, located the pain as being between her shoulder-blades, if rest relieved her pain, or if her backache amounted to stiffness prior to exercise, she was excluded. Correction by this method left 18% of patients with backaches which could possibly be related to an erosion and 2% of controls. In the erosion group nine cases were included in which data concerning localization, the effect of movement, etc., were not available, so that 18% is almost certainly too high. Moreover, by following the progress of patients with backache it became more and more obvious that cervical erosions and backache could not be correlated. First of all, backache becomes uncommon after four to five months, and, secondly, its persistence does not depend on the persistence of a post-natal erosion. For example, of nine patients with persistent backache, six had healed and three had unhealed cervical erosions five months after delivery. Vice versa, persistent erosions five months after delivery were not accompanied by a high incidence of backache.

Although it is admitted that a widely split cervix with an obstetric laceration running up the lateral fornix to an indurated and tender parametrium can cause low backache (Young, 1938; Barns, 1948), it seems clear from our observations that cervical erosions, *per se*, do not give rise to backache. It follows that routine cauterization of cervical erosions for the cure of backache is unwarranted.

2. Post-natal Leucorrhoea

Considering the enormous changes in the genital tract during childbirth, it is not surprising that some women should have a vaginal discharge six weeks after delivery. It is a mistake, however, to observe mucus at the lower cervix and to assume without further study that you have discovered the source of discharge. Moreover, if removal of the mucus or mucopus at the portio uncovers an erosion it may be wrong to assume that this is a diseased cervix producing abnormal quantities of mucus or mucopus. In fact, before diagnosing leucorrhoea of cervical origin it is essential to *prove* that the cervix is the source of discharge.

Incidence of Vaginal Discharge.—Six weeks after delivery 34 (28%) patients with erosions complained of vaginal discharge; 21 (17%) had only traces. However, 25 (18%) post-partum controls also had vaginal discharge and 20 (14%) had traces. By elimination of traces of discharge, lochia, trichomonas vaginitis, and so on, the incidence of leucorrhoea is corrected to 17% for erosions and 9% for controls. Six weeks after delivery, therefore, 17% of patients with erosions complained of discharge, but this is not remarkable when the normal incidence is 9%. Moreover, by studying the clinical findings at the cervix and comparing them with the patient's symptoms of discharge, we shall endeavour to show that the cervix is seldom the source of discharge.

The Post-natal Mucous Plug

The physical properties and the cell content of the plug of mucus at the post-natal cervix vary greatly from case to case. There is, however, no typical mucous plug commonly seen in erosions which is not equally common in post-natal controls, so that marked erosions may secrete traces of clear mucus and, vice versa, a normal cervix may secrete abundant mucopus.

Six-weeks Cusco Examination

Cervical Mucus	Erosions	Controls
Opaque plug	44	59
Trace	15	3
Translucent	30	29
Absent	17	37
Inadequate record	15	13
	121	141

Six weeks after delivery, therefore, the cervical mucous plug is usually bulky but tenacious, while an endocervical specimen practically never resembles "mid-cycle" mucus—that is, it seldom pours out as a crystal-clear liquid and it cannot be pulled into threads. Perhaps as a result of its tenacious quality, a stream of mucus is rarely seen extending to the vulva, which might be the case if the mucus were of a "runny" character. Whether or not this explanation is valid, there is a surprising lack of correlation between the patient's symptoms of discharge and the volume of mucus at the cervix. For example:

	No Leucorrhoea	Leucorrhoea
Opaque mucous plug at portio (42 cases)	31 (74%)	11 (26%)
Clear mucus, traces, or none (61 cases)	48 (79%)	13 (21%)

It is clear, therefore, that a large mucous plug may exist *without* discharge at the vulva; on the other hand, a trace of clear mucus at the portio is commonly seen in patients complaining of vaginal discharge.

Microscopical specimens were taken from 100 post-natal erosions and 100 (six-weeks) controls. The important finding was that mucus which appeared clinically to be opaque or even mucopurulent often had but a few polymorphs, the smear consisting of clouds of epithelial cells of many shapes and sizes. Indeed, one-third of all the smears had no pus cells (polymorphs).

Cell-smears from erosions and controls varied from case to case, but there was no preponderance of inflammatory cells in the erosion-smears. With Papanicolaou's staining (Papanicolaou and Traut, 1943), cervical mucus was almost without exception web-like or crenated, although a few specimens were obtained which resembled typical mid-cycle mucus—that is, they had translucent and acellular mucus which presented a pattern of parallel threads.

To summarize: (1) Considering that only six weeks had elapsed since parturition it is not surprising that discharge affected normal patients and those with erosions. (2) Study of the cervical mucous plug suggests that the cervix is seldom the source of vaginal discharge.

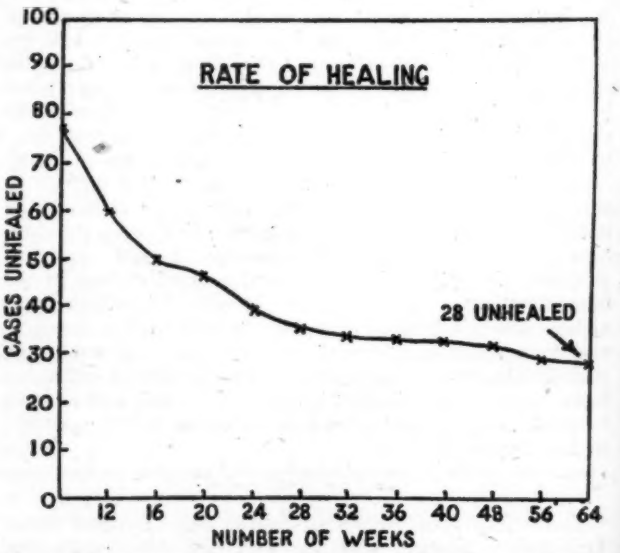


FIG. 1.—Disappearance of cervical erosions without treatment was recorded in 30 out of 77 patients (39%) by 20 weeks and in 42 (55%) by 28 weeks. The 28 unhealed erosions have not been observed for 64 weeks, but are at present under observation. (See text.*)

Number of cases observed with no treatment	77
Spontaneous healing	49 (64%)
Persistence over 20 weeks	28 (36%)

*The 28 unhealed erosions are at present under observation and tend to heal. The periods of observation are as follows: 20 weeks, 5 erosions; 24, 2; 28, 2; 32, 1; 36, 2; 40, 5; 48, 2; 52, 3; 56, 2; 64, 4.

Follow-up Study

At intervals of six to eight weeks 77 patients were re-examined (Fig. 1). They were discharged as "healed" if a small Cusco speculum showed no evidence of an erosion.

If the erosion persisted over five months it was labelled "unhealed." Vaginal smears and, usually, biopsies were taken at each visit. It was noted that even six to seven months after delivery the vaginal vault could be distended and the cervix opened to give the appearance of an erosion; in fact, 20% of our healed patients might have been called cases of persistent erosion if care had not been taken to use a small Cusco speculum, which was allowed to collapse as far as possible.

The result of the non-treatment of 77 erosions, therefore, was spontaneous healing after a variable number of months in 49 cases (64%) and persistence in 28 (36%).

The effect of this spontaneous process of healing on leucorrhoea was carefully noted, for it was assumed that the price of non-treatment would be (*a*) that during the months of observation the patient would suffer from cervical discharge at the vulva, and (*b*) that finally the unhealed cases would require cautery. In fact, however, not many of our patients under observation were troubled with discharge, and only a few eventually required cauterization.

Cervical Healing and Leucorrhea

(*a*) Leucorrhoea in 49 healed erosions:	
No discharge 6 weeks post partum	28 cases
Discharge " " " "	21 "
Cure of discharge with healing of erosion ..	13 "
Persistent discharge with healing of erosion ..	8 "
(*b*) Leucorrhoea in 28 unhealed erosions:	
No discharge at 6 weeks	13 "
Discharge " "	15 "
Cure of discharge without healing	8 "
Persistent discharge without healing	7 "

The final number of patients with discharge was eight with healed erosions where the cervix was probably not the source of discharge and seven where discharge and persistent erosion coexisted. Details of these seven cases are of interest as they represent the patients whose symptoms finally required treatment:

No.	Erosion	Discharge	Treatment
981	Raw fleshy	Yellow	Patient not available
909	Large raw	Mucus trace	Cautery out-patient
968	Small	Clear mucus	" "
1031	Raw flat	Trace clear mucus	" "
909	" "	Yellow mucus	Cautery in-patient (relapsed twice)
973	Raw moderate	Moderate mucus	Cautery out-patient
936	Raw flat	Mucus yellow ++	Cauterized 3 times

The final result of non-treatment of 77 cases was that 28 had persistent erosions, which were associated with vaginal discharge in seven; in four out of these seven cases repeated examination made it obvious that the discharge was of cervical origin and could be cured by cautery. In other words, of the whole series of 77 cases only four cases of persistent erosion gave rise to symptoms demanding cauterization.

One case (No. 936) was of especial interest since the patient relapsed twice after cautery and produced copious amounts of clear acellular mucus of "runny" character ("mucorrhoea"). Her final cervical biopsy (from the edge of the erosion) showed a normal involuting cervix.

The following conclusions therefore seem to be permissible: (1) Post-natal erosions tend to heal and should not be treated as a routine measure six weeks after delivery. Review of the patients after 20 or 30 weeks may show an asymptomatic erosion or complete healing. (2) Cervical erosions *proved* to be a source of vaginal discharge should be singled out for cautery about 20 weeks after delivery. (3) Simple observation of post-natal erosions will leave perhaps 5–10% of cases with symptoms which demand treatment by cautery.

The Endocrine Background to Erosions

At the outset of this study we had accepted the common belief that post-natal erosions are not physiological but pathological, and that they could give rise to symptoms akin to those arising from the common erosion of gynaecological practice (Arthure, 1938; Ross, 1950). A search was therefore made for some clue to the causation—for example, to ascertain if senile or poorly developed vaginal smears were commonly present with erosion in contrast to the normal. Note was also made of the time of cessation of lactation and duration of amenorrhoea, as well as the appearance and physical properties of cervical mucus, but there was apparently no correlation between these observations and the onset or persistence of erosion. For example, erosions persist or disappear irrespective of whether or not the patient has begun to menstruate or has ceased to lactate, and, as we have stated above, the physical and cytological properties of cervical secretions do not depend on the presence of an erosion.

Vaginal Smears

The common vaginal smear of pregnancy is peculiar in that clumping is common with surface cells, which are small (15–20 μ diameter). In the depth of the clump of cells there can be seen larger cells, somewhat flattened and 40–50 μ in diameter, with well-defined nuclei. These "pregnancy" or "luteal" smears have a variable number of polymorphs, while their persistence is remarkable even six months after parturition. A less common smear represents different layers of the mucosa, and these have been labelled "mixed," grade II, and grade I (stratum germinativum cells) according to their lack of maturity. The smear containing large flat squamae (as in an oestrogenic or mid-cycle smear) is rare. In the series of cases under review vaginal smears were taken six weeks after confinement, and the results of examination were as follows:

	Erosion	Control
Luteal or "pregnancy" smear polymorphs +	26 ..	17
" " " " " +++	13 ..	11
Luteal or pregnancy smear, polymorphs absent	39 ..	64
Mixed smear, polymorphs absent	2 ..	13
" " polymorphs + ...	8 ..	3
Grade II or grade I (deeper layers)	2 ..	3
Grade III ("oestrogenic")	3 ..	2
	93	113

Although admittedly vaginal cytology is a very rough gauge of ovarian function, the following conclusions are made: (1) post-partum senile smears are rare—that is, the vaginal mucosa is seldom atrophic; (2) the common smear is of intermediate type, obviously from mature vaginal mucosa (82%); (3) the maturity of cell-smears bears no relationship to the presence of erosions. It must be stated, however, that no attempt was made to take the specimens at the estimated mid-cycle. Finally, no correlation is possible between the maturity of vaginal smears and the persistence or healing of erosions.

That our search for the aetiology of post-natal erosion failed is not surprising if the thesis which we shall try to establish is accepted—namely, that post-natal erosions are physiological.

Cervical Histology

A different biopsy site was chosen at subsequent examinations, but both in normal cervices and in clinical erosions the squamo-columnar edge was the target. A laryngeal punch obtained small specimens measuring about 5 by 2 by 2 or 3 mm. deep. No vulsellum or local analgesic was used, although a nasal-wire cautery was necessary to stop the bleeding.

The outstanding observation was that the effects of pregnancy persist for months after delivery, although the cervix may clinically appear normal. Secondly, biopsies from erosions often resemble normal (involuting) tissue. To demonstrate this, the changes of pregnancy are tabulated—for example, if the glands are still "pregnant" they are numerous to the extent of resembling a cross-section of a honeycomb, or if the stroma is still pregnant it is cellular or lacks intercellular substance.

Definitions

1. *(a) Glands* +++ *:* Numerous glands up to a "honeycomb" effect. Columnar epithelium usually tall, actively secreting mucus (Fig. 2, B). *(b) Glands absent:* Either the glands were not reached or in the squamo-columnar area no glands were present at the limits of the punch. (Biopsy about 3 mm. deep.)

2. *(a) Stroma cellular:* Connective-tissue cells packed together or separated by oedema; scanty intercellular fibrils (Fig. 2, B). *(b) Hyaline:* Relatively acellular connective tissue; up to a year or more after delivery delicate intercellular fibrils predominate. (As involution proceeds this tissue spreads towards the glands from below the squamous epithelium.)

3. *Inflammation:* Inflammatory processes were seldom more than mild, and amounted to no more than stromal infiltration by round cells. Desquamation was rarely seen. *(a) No inflammation:* Subepithelial infiltration by lymphocytes confined to a small clump around the squamo-columnar junction (Fig. 3). *(b) Mild round-cell inflammation:* Lymphocytes and sometimes plasma cells infiltrating the subsquamous and periglandular stroma (Fig. 4). *(c) Subacute inflammation:* Dilated capillaries with polymorphs, lymphocytes, and plasma cells in the stroma deep to the mucous and squamous epithelium (Fig. 5).

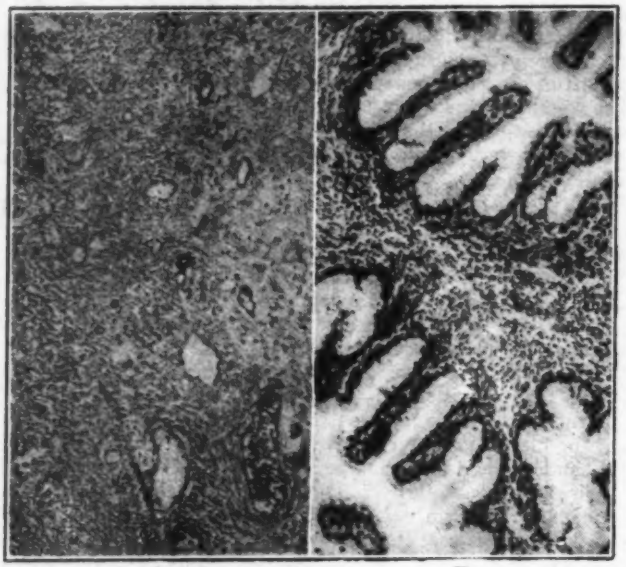


FIG. 2.—(A) Normal stroma. (B) Residual pregnancy-effects six weeks after delivery. Pregnancy causes the mucous glands to proliferate, while the stroma is converted to a cellular structure. Lymphocytes and plasma cells are common in the stroma of pregnancy.

FIG. 3.—Erosion six weeks after delivery—classified histologically as non-inflammatory—that is, the erosion amounted to an area of columnar epithelium on the portio. Round-cell infiltration of the stroma at the squamo-columnar junction is so common a finding that it can be taken as normal. The rest of the section was practically free from round cells.

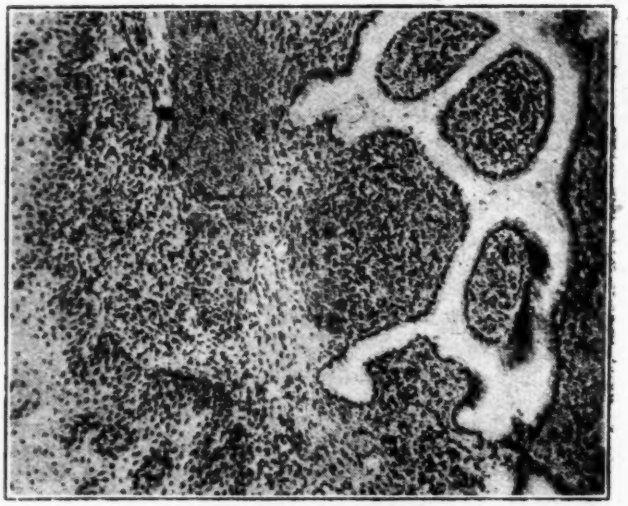


FIG. 4.—Squamo-columnar biopsy of normal cervix six weeks *post partum*. Marked round-cell infiltration of stroma, especially near mucous glands; classified in the text as "mild round-cell infiltration."

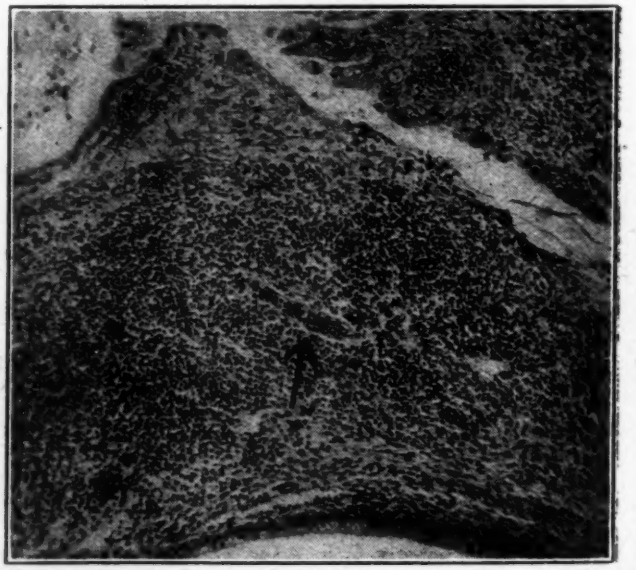


FIG. 5.—Squamo-columnar junction of an erosion six weeks after delivery. Subacute inflammation with capillaries (arrow) packed with polymorphs and lymphocytes. Subacute inflammation is rare in erosions and controls.

Histology Six Weeks After Delivery (Fig. 6)

	Erosion	Control
1. Mucous glands:		
Numerous secreting	66 (89%)	37 (58%)
Inactive or few	1 (1·5%)	9 (14%)
No glands	7 (9·5%)	18 (28%)
2. Stroma:		
Cellular (still "pregnant")	61 (82%)	32 (53%)
Hyaline (delicate fibrils)	11 (15%)	18 (30%)
Adult or whorled	2 (3%)	10 (17%)
3. Inflammation		
None	26 (35%)	38 (65%)
Mild round-cell infiltration (only at the surface in tips of folds of columnar epithelium; 9)	35 (47%)	16 (26%)
Subacute (only at the surface in tips of folds of columnar epithelium; 3)	13 (18%)	5 (9%)

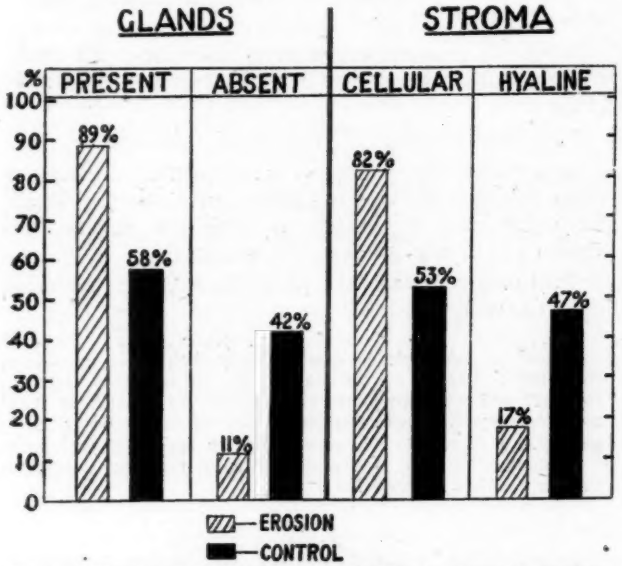


FIG. 6.—Gland activity of pregnant type was common to erosions and controls, but in the controls the biopsy failed to reach the glands in 18 cases and showed a few in 9 (total 42%). In erosions the stroma tends to be more cellular than in controls.

Six weeks after delivery, therefore, squamo-columnar biopsies from normal cervices resemble those from the edge of post-natal erosions. Both show persistent pregnancy effects such as a massive gland pattern with apparently active secretion; in both, the stroma is cellular, while inflammatory reactions such as infiltration of round cells and dilated capillaries are common. It is important to note that inflammation is confined to the surface of the cervix and is generally of mild type without desquamation (Figs. 3 and 4).*

Miscellaneous Findings.—Less common pregnancy effects were also observed, such as metaplasia, phagocytosis of hyaline tissue by fibroblasts, "Hofbauer" cysts, and so on (Hofbauer, 1933). Stromal oedema, sometimes with effusion of red cells, was common in six-weeks specimens, but decidual cells as described by Sheets (1948) and McIlrath and Hellestrand (1947) were not observed. Hyperplastic cells in the deeper layers of the squamous epithelium were also occasionally seen, but there was nothing resembling intra-epithelial cancer (Danforth, 1950).

Advancing Involution

Seventy-seven squamo-columnar biopsies from both healed and persistent erosions were taken at intervals up to a year after delivery. By contrasting them with 142 specimens obtained six weeks after delivery it was possible to observe the slow process of involution as it affects mucous glands, stroma, resolution of inflammatory reaction, and so on. Secondly, biopsies from the squamo-columnar edge of persistent erosions were compared with biopsies from healed cervices.

The outstanding change in the cervix with the passage of five to six months is in the stroma, which gradually changes from its "pregnant" or cellular state to a more fibrous or acellular structure (Fig. 7). The cellular stroma first disappears in the lower cervix beneath the squamous epithelium of the portio, but tends to persist around mucous glands or near small foci of inflammation. Soon after delivery the pregnant close-packed cellular stroma is replaced by young fibrous tissue with delicate fibrils of intercellular substance. This new fibrous tissue gives way to connective tissue possessing coarser intercellular substance. But in our sections, taken up to 12 months after delivery, the non-pregnant acellular stroma was seldom completely reproduced (compare Figs. 2A and 7).

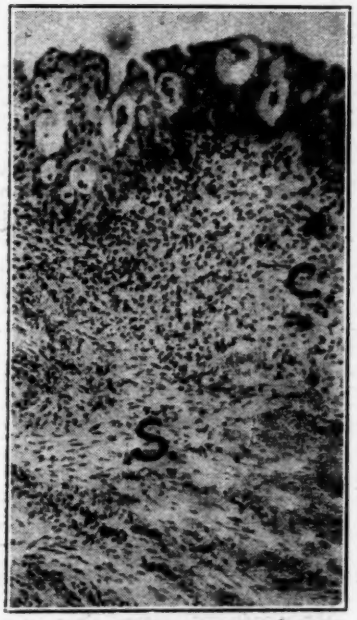


FIG. 7.—Persistent erosion 12 months *post partum*. Replacement of cellular stroma (C) by more acellular tissue (S) is not yet complete. Note the cystic appearance of the squamous epithelium.

Three to four months after delivery oedema of the stroma disappears, while the widely dilated and numerous capillaries in the stroma also disappear.

Inflammatory cells tend to become less prominent, but even months after delivery scattered foci or diffuse areas of round cells are still common (Fig. 8). By six or seven months the mucous glands become less numerous, and our biopsies often failed to reach gland tissue—that is, the mucous glands not only diminish in number but appear to retract from the lower cervix.

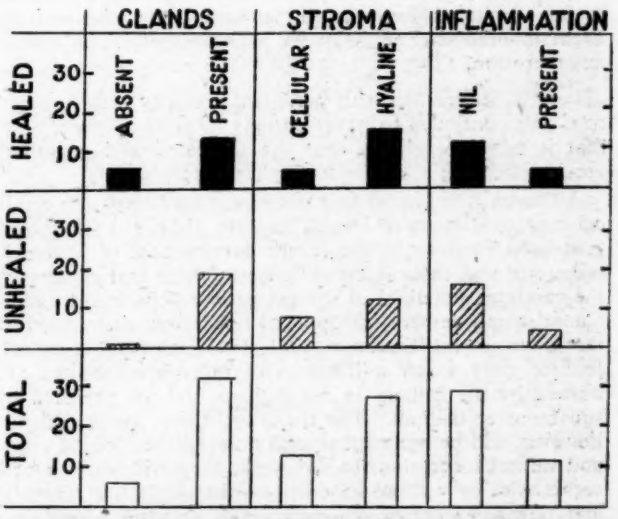


FIG. 8.—The effects of involution of cervical erosion (40 cases) at 20 weeks are present in the cervix with or without an erosion—namely, the glands become less prominent, the stroma loses its cellularity, while inflammation diminishes.

*Robert Meyer's (1910) dictum, "Ohne Entzundung keine Erosion," might place most of this group among the congenital non-inflammatory types of erosion.

By taking a sample of 20 specimens from persistent erosions and 20 erosions which had healed spontaneously, it is easy to show that the changes of involution affect not only erosions which persist but also those which show clinical healing (Fig. 8). Thus if a pathologist could be persuaded to give his opinion on one of our small biopsies he would have great difficulty in deciding if the specimen came from the squamo-columnar edge of a *normal cervix* or from an unhealed erosion. In both there would be evidence of advancing involution affecting glands, stroma, and inflammatory cells.

Non-treatment of Post-partum Erosions

Bourne and Bo..d (1939–40) found it difficult to correlate cervices amputated for (clinical) chronic cervicitis with the histology, which often appeared to show no more than mild surface inflammation. Fluhmann (1948), on the other hand, in an important study of the histology of the erosions of pregnancy refers to the clinical condition as the "so-called erosion" of pregnancy. Nevertheless, in many clinics post-natal erosions are diagnosed as pathological six weeks after delivery, and routine cauterization is carried out. Two obvious criticisms of non-treatment of erosions might be made—namely, that post-natal erosions might be a source of discharge, and, secondly, they might lead to future sterility.

It has already been mentioned that few of our untreated cases of erosion were subject to mucous discharge of cervical origin; in fact, of the total of 77 cases only 4 (5%) finally had true "mucorrhoea" from erosions of the cervix. It is not suggested, however, that in non-pregnant women erosions never cause leucorrhoea; for, either by repeated Cusco examination in out-patients or by a tampon test, it is occasionally possible to prove that a patient's discharge arises in the cervix. It seems clear to us from this clinical study, however, that the cervical mucus of the post-partum cervical erosion seldom reaches the vulva in amounts to cause leucorrhoea.

Secondly, our observations on the 28 cases of persistent erosion do not suggest that sterility from impenetrable cervical mucus results from non-treatment. In fact, clear or acellular mucus is commonly secreted from large post-natal erosions, persisting for months after delivery, as in the following case:

A married woman aged 22. On three occasions endocervical spermatozoa were obtained in smears of translucent endocervical mucus. The patient had not been instructed to have coitus before presenting herself for examination. Eight months after delivery she was pregnant, still with a large erosion.

Four other women with persistent erosions became pregnant and continued to have erosions in early pregnancy, so that it appears unlikely that the untreated and persistent erosions provide a barrier to further conception.

Although it is known that pregnancy predisposes to cervical cancer (Ministry of Health Reports, 1927), the relation of post-natal erosions to the future development of cancer is unknown, and there is no evidence to show that cautery of the cervix as practised in the out-patient department with a "nasal-wire" cautery (as opposed to *thermal destruction* of the lower cervix) (Cashman, 1941, 1945) can prevent cancer. In fact, only a few millimetres of mucous epithelium are burned by the cautery in out-patients and are replaced by squamous epithelium. The majority of our young patients, however, will be pregnant several times in the ensuing years, and on each occasion, so to speak, they will grow a new cervix with or without an erosion—that is, in the antenatal and post-natal period the cervix will undergo a complete metamorphosis. In the light of these changes in the physiology of the cervix it is difficult to regard surface cautery of the post-natal cervix as being able to influence the future behaviour of the epithelial tissue of the cervix.

Conclusions and Summary

It seems clear to us from this clinical study that post-partum cervical mucus, possibly owing to its tenacious quality, seldom reaches the vulva in amounts to cause leucorrhoea. Post-natal erosions are, in fact, innocuous, and, although it is possible in a few cases to prove that vaginal discharge arises from them, in most cases the cervix is not the source. Treatment should therefore be reserved for persistent erosions proved to be the cause of "mucorrhoea."

Post-natal erosions usually resolve without treatment.

Post-natal erosions as well as normal post-natal cervices can occasionally be shown to cause "mucorrhoea" six weeks after delivery.

Persistent erosions are usually innocuous, but excessive mucous discharge may demand treatment by cautery (5%).

Post-natal erosions do not cause backache.

Squamo-columnar biopsies from normal cervices and from erosions show post-partum involution; biopsies from the edge of healed or persistent erosions are similar; both depict advancing involution.

Post-natal erosions are physiological, and cauterization is seldom indicated.

I wish to acknowledge gratefully the help I have received from my colleagues on the staff of the Birmingham Maternity Hospital, and especially Dame Hilda Lloyd, Mr. Charles D. Read, and Professor S. Zuckerman for their criticism and advice. I also wish to thank our unit sister, Miss M. Scott-Will, and senior technician, Miss M. E. Attwood, for their enthusiasm and help in conducting this investigation.

REFERENCES

Arthure, H. (1938). *J. Obstet. Gynaec. Brit. Emp.*, 45, 985.
Barns, H. H. F. (1948). *Practitioner*, 160, 68.
Bourne, Alec, and Bond, L. T. (1939-40). *Proc. roy. Soc. Med.*, 33, 787.
Browne, F. J. (1946). *Antenatal and Postnatal Care*. Churchill, London.
Cashman, B. Z. (1941). *Amer. J. Obstet. Gynec.*, 41, 216.
—— (1945). Ibid., 49, 190.
Danforth, D. N. (1950). Ibid., 60, 985.
Fluhmann, C. F. (1948). Ibid., 55, 133.
Hofbauer, J. (1933). Ibid., 25, 779.
McIlrath, M. B., and Hellestrand, A. L. (1947). *J. Obstet. Gynaec. Brit. Emp.*, 54, 746.
Meyer, R. (1910). *Arch. Gynäk.*, 61, 579.
Ministry of Health Reports on Public Health and Medical Subjects (1927). No. 47. H.M.S.O., London.
Murphy, E. J., and Herbut, P. A. (1950). *Amer. J. Obstet. Gynec.*, 59, 384.
Papanicolaou, G. N., and Traut, H. F. (1943). *Diagnosis of Uterine Cancer*. The Commonwealth Fund, New York.
Ross, Jean, R. W. (1950). *British Medical Journal*, 2, 647.
Sheets, M. V. (1948). *West J. Surg. Obstet. Gynec.*, 56, 317.
Stieve, H. (1927). *Der Halsteil der menschlichen Gebärmutter*. Akad. Verlags, Leipzig.
Young, J. (1938). *British Medical Journal*, 1, 105.

In Korea, the Assistant Director of Medical Services of the Commonwealth Division, Colonel G. Anderton, told a *Daily Telegraph* Special Correspondent (January 29), the health of the troops could not be better. Sickness rates in the summer were well below what was expected, and now the incidence of sickness and cold injuries was lower than in any other campaign. Manchurian fever, however, was still causing anxiety. Since July there have been 70 cases in the division; 16 were reported last month, but the incidence was decreasing with the colder weather. The death rate was between 7% and 10%. Work was being carried out on the disease, but so far the organism had not been isolated. All cases in the division are referred to the American hospital at Seoul, where the experiments are being done, and tons of poison have recently been distributed in a drive against rats and mice, which are suspected of carrying the infection.

CORRECTION OF E.S.R. IN ANAEMIA

EXPERIMENTAL STUDY BASED ON INTERCHANGE OF CELLS AND PLASMA BETWEEN NORMAL AND ANAEMIC SUBJECTS

BY

J. C. F. POOLE, B.M.

AND

G. A. C. SUMMERS, M.B., B.Sc.

(From the Division of Laboratories, Radcliffe Infirmary, Oxford)

When red cells are mixed with their own plasma in varying proportions the sedimentation rate of the more dilute suspensions is greater than that of the more concentrated ones. This observation was first made by Fåhraeus (1921), and has often been repeated. On the basis of such observations, attempts have been made to allow for the effects of anaemia on the erythrocyte sedimentation rate (E.S.R.) by various correction charts and factors. Among these may be mentioned the correction charts of Gram (1928, 1929) and of Rourke and Ernstene (1930), which were based on experimental dilution of the blood of anaemic patients. The correction chart of Wintrobe and Landsberg (1935) has gained considerable popularity; a slide-rule method for correction based on this chart has even been devised (Best, 1950). The Wintrobe and Landsberg chart is based on dilution experiments with normal blood.

Any such correction chart is valid only if we assume that the E.S.R. is determined by certain properties of the plasma and by the concentration of red cells suspended in it, but not by the shape, size, specific gravity, or any other property of the cells: in other words, it is assumed that any sample of red cells suspended in a given plasma at a given concentration would show the same sedimentation rate. This assumption does not appear justified, and Hynes and Whitby (1938) have shown how Wintrobe's correction chart must be modified to fit in with observed facts. For example, in many cases of anaemia a much slower rate is found than would be expected when normal blood is diluted to a level equivalent to that of the anaemic haematocrit reading. Bönniger and Hermann (1923) noted this effect in chlorosis, and it seems to be particularly marked in sickle-cell anaemia (Bunting, 1939, and other workers). Westergren (1924) states that he has often found the E.S.R. lower than he would have expected from the reduced haemoglobin level. On the other hand, Newham and Martin (1928) maintained that the size and specific gravity of the cells do not affect the E.S.R., and this has been accepted by Wintrobe and Landsberg (1935) and restated by Cutler, Park, and Herr (1938).

Some authors have even gone so far as to deny that the number of red cells present influences the sedimentation rate: Fåhraeus (1929), observing this slowing effect, believed that some compensatory mechanism was at work in anaemia. Bouton (1938), on finding that the red-cell count and the E.S.R. can fluctuate independently in the course of a disease, dismissed the idea that the red cells could have any important effect on the E.S.R. Cutler, Park, and Herr (1938) made a careful study of the formation of red-cell aggregrates, interchanging cells and plasma between normal and anaemic subjects, and concluded that it was only the plasma which influenced the rate: however, they did not use cell–plasma mixtures of equal haematocrit level, and therefore the value of their experimental results is reduced.

Terry (1950) found no significant difference between the sedimentation rates of a group of normal subjects and a group of patients suffering from anaemia "of a benign origin." He does not explain clearly how anaemia of a benign origin is differentiated from other types of anaemia, nor what precautions were taken to avoid bias against including in his benign category any patient with a markedly raised E.S.R. But whatever criteria were used, this is not an unselected series, and a statistical analysis does not improve its significance. It is one thing to say that in many cases of anaemia some compensating factor is at work which masks the potential accelerating effect of dilution—this is undoubtedly true; it is quite another matter to postulate that this compensating factor quantitatively neutralizes the effect of dilution and that therefore a raised E.S.R. has the same significance in an anaemic as in a non-anaemic patient.

In this investigation we have attempted to throw further light on the problem by studying the separate effects on sedimentation of the cell and plasma components of normal and anaemic blood.

Method

Thirty experiments have been performed with the blood of patients suffering from different types of anaemia classified under the four headings of: symptomatic (that is complicating some other disease), post-haemorrhagic, iron-deficiency, and macrocytic anaemias. Blood films were examined with special reference to red-cell size and shape. In each case information was obtained about any abnormality which might influence the E.S.R. The Westergren technique was used in every experiment. Blood was diluted with 3.8% sodium citrate in the proportion of four parts of blood to one part of sodium citrate solution. A column of citrated blood 200 mm. high was set up in a Westergren tube and the E.S.R. read at the end of one hour.

Dilutions were made according to a standardized procedure to cover a haematocrit range of from approximately 40 down to below 10. Haematocrits were always checked in Wintrobe tubes on the blood run out of the E.S.R. tube after reading. When mixtures were made, the cells, after centrifuging and removal of plasma, were washed three times by centrifuging after shaking up thoroughly with normal saline. Five to seven different dilutions were prepared with (1) normal cells in normal plasma; (2) anaemic cells in anaemic plasma; (3) normal cells in anaemic plasma; and (4) anaemic cells in normal plasma. When cells and plasma are interchanged in this way between two samples of normal blood no significant alteration in sedimentation rate is found. This observation rules out a number of possible experimental artifacts: in particular, it is evident that centrifuging and washing cells as we have done does not alter their sedimenting properties. The blood of the normal subject in each case belonged, of course, to the same ABO blood group as the patient.

Recording of Results

Graphs were drawn of E.S.R. against haematocrit for each experiment, and typical examples of the results obtained in the four principal categories of anaemia are given in Figs. 1, 2, 3, and 4. In all the graphs reproduced the haematocrit figure is the figure given by the diluted blood. The results do not seem to vary very widely from a similar dilution series made with dry oxalate anticoagulant (Hambleton and Christianson, 1939), and closely comparable series of figures

can be obtained with dry sodium citrate and with 3.8% sodium citrate solution, the sedimentation rates always being slower with the citrate solution to about the same extent at each haematocrit level (Westergren, 1924). Nevertheless, these results should be applied only to E.S.R.s determined by the Westergren method.

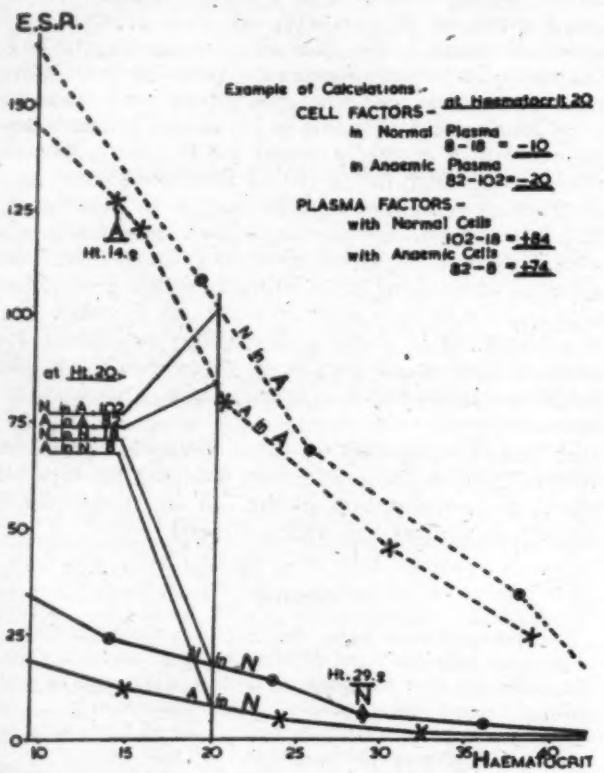


FIG. 1.—Symptomatic anaemia (carcinoma). E.S.R. plotted against haematocrit for: normal cells in normal plasma (N in N); anaemic cells in anaemic plasma (A in A); normal cells in anaemic plasma (N in A); anaemic cells in normal plasma (A in N).

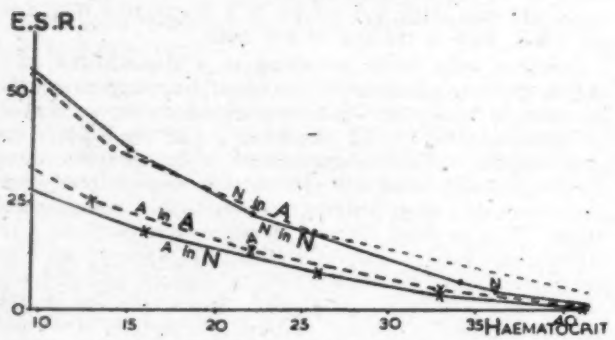


FIG. 2.—Post-haemorrhagic anaemia (haematemesis). See legend to Fig. 1.

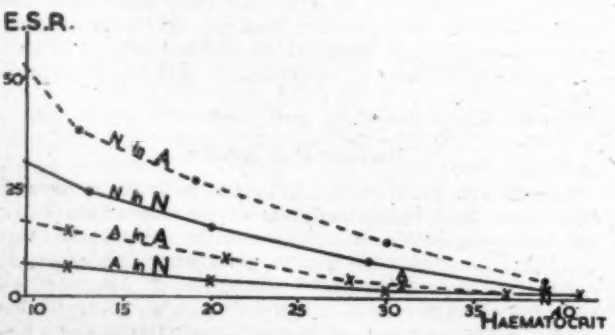


FIG. 3.—Iron-deficiency anaemia (menorrhagia). See legend to Fig. 1.

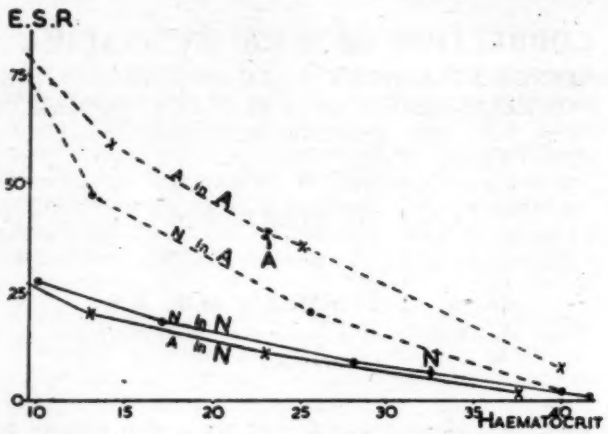


FIG. 4.—Macrocytic anaemia (pernicious anaemia). See legend to Fig. 1.

Fig. 5 is a composite graph showing the E.S.R. at different haematocrit levels for 34 normal blood samples. This graph therefore shows the approximate range to be expected of normal cells in normal plasma at the haematocrits given by the different dilutions, and it can be used for rough computation of the expected degree to which the E.S.R. should be

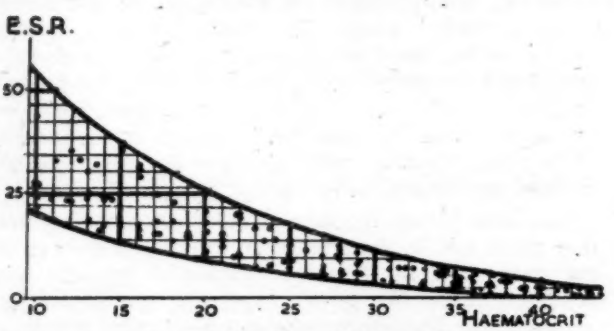


FIG. 5.—Composite graph showing E.S.R. at different haematocrit levels for 34 normal blood samples.

raised by anaemia. In order to show the approximate degree to which the different factors in the cells and plasma affect one another in the interchanges used in the experiments, the E.S.R.s were read off the graphs at the arbitrary haematocrit level of 20. The figures so obtained from the four haematocrit/E.S.R. curves drawn in each experiment indicate the effect of the plasma and of the cells upon the sedimentation rate.

Results

In describing the results of these experiments it is convenient to speak of the cells of a particular patient as having a "cell retarding factor" if they sediment more slowly in a given plasma than do normal cells, or a "cell accelerating factor" if they sediment more rapidly. Similarly, plasma may be said to have a "plasma retarding factor" if cells suspended in it sediment more slowly than they do in normal plasma, or a "plasma accelerating factor" if they sediment more rapidly. It is emphasized that these factors are postulated for convenience only and that no attempt was made to demonstrate their physical basis: indeed, this conception of accelerating or retarding factors breaks down when we consider the behaviour of blood in the macrocytic anaemias.

The accompanying Table shows cell and plasma accelerating and retarding factors for 30 cases of anaemia classified into the four groups shown. The mean values for these factors are given for each group, and, in parentheses, the lowest and highest figures obtained in each group. Accelerating factors are indicated by a plus sign, and retarding factors by a minus sign. The figures are obtained from

	Symptomatic Anaemias (14 Cases)	Post-haemorrhagic Anaemias (5 Cases)	Iron-deficiency Anaemias (6 Cases)	Macrocytic Anaemias (5 Cases)
Cell accelerating or retarding factors:				
In anaemic plasma	−17 (−86 to +5)	−6 (−14 to +3)	−11 (−31 to +2)	+27 (0 to +95)
In normal plasma	−7 (−15 to +5)	−8 (−14 to +8)	−7 (−12 to −3)	+7 (−2 to +24)
Plasma accelerating or retarding factors:				
With anaemic cells	+57 (+17 to +138)	−1 (−13 to +7)	+8 (+4 to +13)	+20 (−8 to +69)
With normal cells	+67 (+25 to +134)	−2 (−8 to +10)	+12 (+4 to +24)	0 (−13 to +17)

the graphs at the arbitrary haematocrit level of 20. For example, the cell accelerating or cell retarding factor in anaemic plasma is found by subtracting the figure for the sedimentation rate of normal cells in anaemic plasma from that for anaemic cells in anaemic plasma at the 20% haematocrit level (see Fig. 1).

From the table it will be seen that in the symptomatic anaemias a marked plasma accelerating factor and a much smaller, inconstant, cell retarding factor are found. In the post-haemorrhagic anaemias the differences are less than in the other groups, although a cell retarding factor is usually found: in fact, the blood of a patient with a post-haemorrhagic anaemia behaves much more like a dilution of normal cells in normal plasma than does any other type of anaemic blood. The iron-deficiency anaemias are characterized by a cell retarding factor and a plasma accelerating factor of approximately equal degree. In some cases the cell retarding factor predominated, giving an E.S.R. lower than would be expected from a dilution of normal cells in normal plasma to an equivalent haematocrit level.

In pernicious anaemia the position is more complicated. In all other types of anaemia it seems that if, for example, cells possess a cell retarding factor they will exhibit this property both in the normal and in the anaemic plasma; equally, if plasma is found to possess a plasma accelerating factor it will usually exert this effect both on normal and on anaemic cells. Such uniformity is not found in pernicious anaemia. Generally speaking, the cells seem to possess an accelerating factor, but this property is always more marked in the anaemic plasma than in normal plasma, and in some cases the effect is reversed—that is to say, the anaemic cells sediment more rapidly than normal cells in anaemic plasma, but more slowly in normal plasma.

Discussion

Attempts to correct the E.S.R. for the effects of anaemia are designed to assist in solving a common practical problem: an anaemic patient is found to have a raised E.S.R.—is this due solely to the anaemia, or does it suggest underlying organic disease? The authors of correction charts believe that they can answer this question, at least in the majority of cases. All correction charts are based on the assumption that abnormalities of the cells exert at most a negligible influence on the sedimentation rate. Previous workers have cast doubts on the validity of this assumption, and we believe that our experiments show conclusively that it cannot be maintained. In fact, cell factors operate in most cases of anaemia, and are often of the same order of magnitude as the plasma factors. This being so, the "corrected" E.S.R. may often be misleading to the clinician.

The nature of the cell retarding factor found in most cases of anaemia is not clearly brought out by our experimental results. It is easy to imagine that anisocytosis might interfere with rouleau formation. In all cases, apart from the macrocytic anaemias, the extent of anisocytosis as judged from the appearance of the film did seem to bear at any rate a rough relation to the magnitude of the cell retarding factor. However, this is by no means true of the macrocytic anaemias, in which marked anisocytosis may be accompanied by a cell accelerating factor. It may be that some complicating factor masks the potential effect of anisocytosis in these cases. The alternative suggestion that the relative specific gravity of the cells is the important factor cannot be ruled out: this possibility was raised by Bendien, Neuberg, and Snapper (1932) and by Ham and Curtis (1938) on the basis of a few experiments. From our comparatively small number of observations it would be unwise to infer that any one property of the erythrocytes is responsible for the accelerating or retarding factors we describe.

A limited amount of information may be obtained from consideration of the E.S.R. and the haematocrit in conjunction with a chart like that given by Hynes and Whitby (1938) showing the sedimentation rates obtained at varying dilutions of normal cells in their own plasma, with curves lying above these limits representing degrees of elevation of the E.S.R. The basis of such a chart is given in Fig. 5. If the value found in a particular case lies well above the normal range the patient probably has some organic disease apart from his anaemia. If the reading is within the normal range or below it no definite conclusions can be drawn. While useful information could no doubt often be obtained by carrying out exchange experiments of the type we describe, the method seems altogether too time-consuming in relation to the value of the results.

Summary

The problem of the erythrocyte sedimentation rate in anaemia has been studied experimentally by interchanging erythrocytes and plasma of normal and anaemic subjects: the E.S.R. was determined at varying haematocrit levels for both types of blood, each type of erythrocyte being suspended in both types of plasma. The results of each experiment were recorded graphically.

In the symptomatic anaemias the anaemic cells sedimented rather more slowly than did normal cells both in normal and in anaemic plasma. Both types of cells sedimented much more rapidly in the anaemic plasma than in the normal plasma. Thus the anaemic cells have a slight retarding influence on sedimentation and the anaemic plasma a marked accelerating influence.

Post-haemorrhagic anaemias behaved more like dilutions of normal cells in normal plasma than did other types of anaemia, but some retarding effect of the cells was usually present.

Iron-deficiency anaemias showed a retarding influence due to the cells and an accelerating effect of the plasma of approximately the same magnitude; in some cases the retarding effect of the cells predominated, giving an E.S.R. lower than would be expected for a dilution of normal cells in normal plasma to the same haematocrit level.

In macrocytic anaemias the sedimenting properties of the cells showed marked differences according to the type of plasma. If uncomplicated, such anaemias did not usually give an E.S.R. greatly above that expected for an equivalent dilution of normal cells in normal plasma.

It may be tentatively inferred that the cell retarding effect is associated with anisocytosis.

The usefulness of methods of "correcting" the E.S.R. for the effects of anaemia is criticized in the light of

these experimental results. Some information can be gained by using a chart of the Hynes–Whitby type.

Our thanks are due to Dr. A. H. T. Robb-Smith, Director of Pathology, Radcliffe Infirmary, Oxford; to Dr. R. G. Macfarlane, in whose department this investigation was carried out, for suggesting the problem; to Dr. Macfarlane and Dr. Rosemary Biggs for constant advice and encouragement during the experiments; to Dr. O. G. Dodge for help in some of the experimental work; and to the donors of our normal blood specimens.

REFERENCES

Bendien, W. M., Neuberg, J., and Snapper, I. (1932). *Biochem. Z.*, **247**, 306.
Best, W. R. (1950). *Amer. J. Clin. Path.*, **20**, 87.
Bönniger, M., and Hermann, W. (1923). *Klin. Wschr.*, **2**, 744.
Bouton, S. M., jun. (1938). *J. Lab. clin. Med.*, **23**, 519.
Bunting, H. (1939). *Amer. J. med. Sci.*, **198**, 191.
Cutler, J. W., Park, F. R., and Herr, B. S. (1938). *Amer. J. med. Sci.*, **195**, 734.
Fahraeus, R. (1921). *Acta med. scand.*, **55**, 1.
—— (1929). *Physiol. Rev.*, **9**, 241.
Gram, H. C. (1928). *Acta med. scand.*, **68**, 108.
—— (1929). Ibid., **70**, 242.
Ham, T. H., and Curtis, F. C. (1938). *Medicine*, **17**, 447.
Hambleton, A., and Christianson, R. A. (1939). *Amer. J. med. Sci.*, **198**, 177.
Hynes, M., and Whitby, L. E. H. (1938). *Lancet*, **2**, 249.
Newham, H. B., and Martin, P. H. (1928). *Quart. J. Med.*, **22**, 145.
Rourke, M. D., and Ernstene, A. C. (1930). *J. clin. Invest.*, **8**, 545.
Terry, R. (1950). *British Medical Journal*, **2**, 1296.
Westergren, A. (1924). *Ergebn. inn. Med. Kinderheilk.*, **26**, 577.
Wintrobe, M. M., and Landsberg, J. W. (1935). *Amer. J. med. Sci.*, **189**, 102.

CORTISONE IN IDIOPATHIC STEATORRHOEA

BY

J. BADENOCH, B.M., M.R.C.P.

(From the Nuffield Department of Clinical Medicine, Radcliffe Infirmary, Oxford)

Taylor, Comfort, Wollaeger, and Power (1951) have reported favourable results in the treatment of idiopathic steatorrhoea with cortisone in doses of 25–100 mg. daily. Following the administration of the drug, there was subjective improvement, with increased appetite, a rise in the level of plasma proteins and prothrombin, and a significant decrease in the amount of fat and nitrogen excreted in the faeces. There is little evidence of impaired adrenal function in the sprue syndrome, but it is well known that cortisone in this dosage may not be acting as adrenal replacement therapy, and that improvement may occur in a number of conditions in the absence of adrenal insufficiency. We therefore decided to attempt to confirm the results of the Mayo Clinic group.

Remissions are common in idiopathic steatorrhoea, and only patients in whom the clinical condition appeared stable were chosen for trial with cortisone. We selected two untreated patients who had been under observation in hospital, and two others in whom considerable improvement had already occurred after a prolonged period of treatment with diet and vitamins, including folic acid. We felt that if the cortisone had any specific effect on the metabolic defect in steatorrhoea it should produce further improvement in the treated cases and perhaps abolish the steatorrhoea. With established methods of treatment the absorption of fat remains impaired in the great majority of patients.

Method

Each patient was given a diet containing 70 g. of protein and 70 g. of fat daily. The total amount of fat excreted in the stools during three consecutive periods of four days, separated by carmine markers, was estimated by the method of van de Kamer, ten Bokkel Huinink, and Weyers (1949). One patient who had also been the subject of a calcium balance had a control period of 36 days. At the end of the control period each patient was given 100 mg. of cortisone daily by intramuscular injection for 24 to 28 days, followed by a smaller dose for two to three days before the drug was discontinued.

During the last two weeks of treatment with cortisone a second fat balance was carried out, and the results were compared with those obtained during the control period. In each case the excretion of nitrogen in the faeces was estimated during the period of control, and again during the second fat balance while the patient was receiving cortisone. A radiograph of the chest was taken before treatment was started, and changes in weight, blood pressure, and serum electrolytes were recorded during the trial. Three of the patients, Nos. 1, 2, and 3, were allowed to go home between the two balances, but all were admitted to hospital during the periods of collection of faeces.

Results

Both the patients who had had previous treatment felt better, and in one the bowels were opened less frequently and the stools became more formed. In one of the untreated cases (No. 4) there was a great improvement in appetite and morale, although little change occurred in the action of the bowels. In the other (No. 3) there was no subjective improvement, but the diarrhoea decreased. One patient (No. 2) gained 2.4 kg. in weight during the period of treatment, owing to the retention of fluid.

Excretion of Fat and Nitrogen.—The Chart shows the percentage of dietary fat excreted in the faeces and the amount of faecal nitrogen in each period of four days, before and during treatment with cortisone. The great variation in the results of consecutive estimations in Case 4 was due to irregular bowel action, which made separation of the periods difficult. The Table gives the difference between

Excretion of Fat and Nitrogen in the Faeces Before and During Treatment with Cortisone

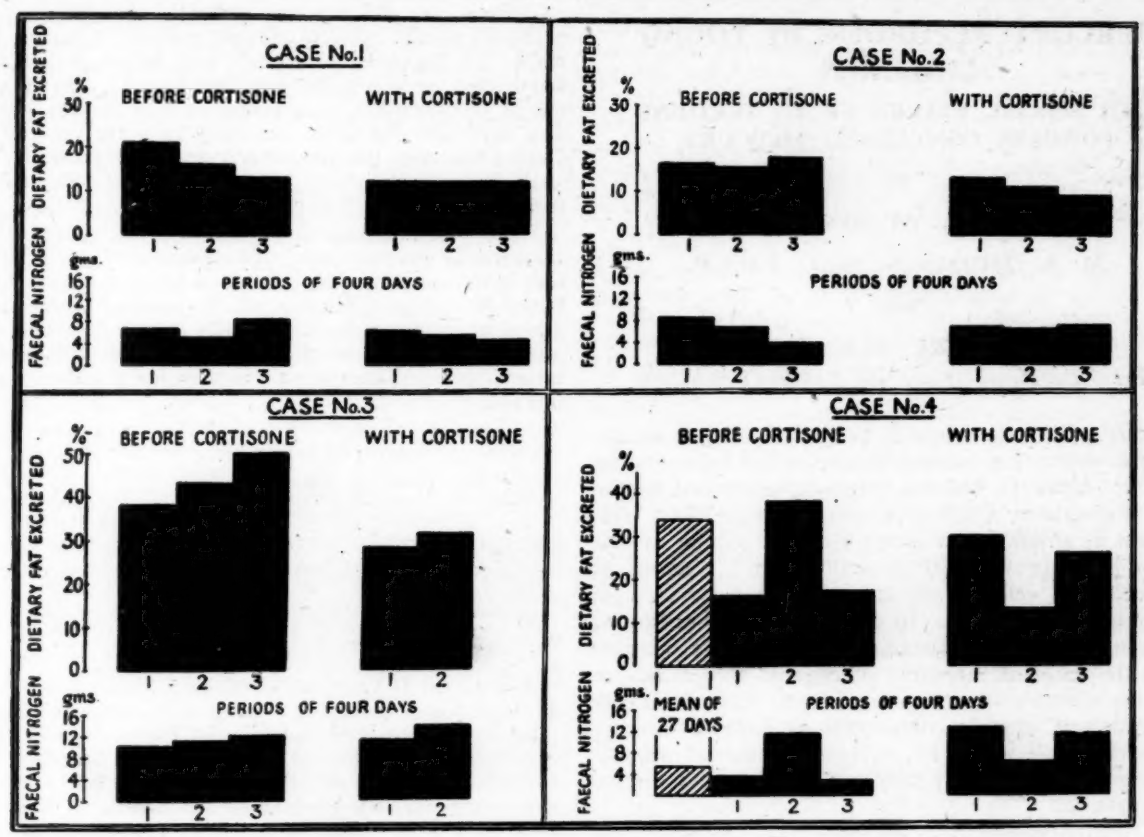
	Case No.	Mean % Dietary Fat Excreted During Consecutive Periods of 4 Days. (Number of Periods in Parentheses)		Mean 4-day Excretion of Nitrogen in Faeces (g.)		Length of Treatment (Days)	Total Dosage of Cortisone (g.)
		Before Treatment With Cortisone	During Treatment With Cortisone	Before Treatment With Cortisone	During Treatment With Cortisone		
Previously Treated	1	16·7 (3)	12·0 (3)	7·4	5·2	28	2·80
	2	16·5 (3)	11·1 (3)	6·9	6·9	33	2·88
Previously Untreated	3	43·6 (3)	29·5 (2)	11·1	11·9	31	2·89
	4	25·0 (9)	23·0 (3)	5·6	9·9	28	2·55

For fat excretion: $t = 2{\cdot}49$; $p > 0{\cdot}05$.

the mean four-day excretion of dietary fat before and during treatment with cortisone. The difference between the amounts of fat excreted is not significant. The effect on the excretion of nitrogen was variable.

Discussion

Hypotension, pigmentation of the skin, and asthenia are common in patients suffering from steatorrhoea, and several observers, noting the close resemblance to Addison's disease, have suggested that adrenal insufficiency may play some part in the pathogenesis of the sprue syndrome (Gloor, 1930; Thaysen, 1932). However, in spite of the fact that the hormones of the adrenal cortex exert an influence on the



normal process of fat absorption (Bavetta, Hallman, Deuel, and Greeley, 1941; Frazer, 1946), and that an excessive quantity of fat is present in the faeces of some patients with Addison's disease (Bergner, Lewis, Stout, Thorn, and Emerson, 1948), the evidence of adrenal insufficiency in sprue or idiopathic steatorrhoea is slight. Black (1946) showed that the hypotension and asthenia in sprue was not accompanied by an increase in serum potassium or a failure of the kidney to conserve sodium, as might be expected in adrenal failure, and cases of steatorrhoea have been treated with deoxycortone (Leishman, 1945) and corticotrophin (Frazer, 1949) without improvement.

The response to cortisone was not striking, which is in keeping with the belief that adrenal cortical function is normal in cases of steatorrhoea. Each patient improved, but results based on the mean four-day excretion of fat can be quite variable and must be interpreted with caution (Fourman, Higgins, Quelch, O'Brien, and Witts, 1948). Taylor, Comfort, Wollaeger, and Power (1951) found more improvement, but the difference may depend on the selection of patients. In patients suffering from intractable diarrhoea cortisone might prove of greater benefit, for Almy (1951) has reported a severe case in which the diarrhoea and hypoproteinaemia responded to treatment with adrenocorticotrophic hormone when other forms of treatment had failed.

Summary

Four patients with idiopathic steatorrhoea, two of them previously untreated, were given 100 mg. of cortisone daily by intramuscular injection for four weeks.

Although the excretion of fat decreased in all, the difference was not statistically significant, and in none was the steatorrhoea abolished.

I wish to thank Miss Moira Aitken and Miss Beryl Brinkhurst for their assistance in the biochemical investigation, Dr. A. M. Cooke for permission to include one patient who was admitted under his care, and Professor L. J. Witts for his advice and criticism at all times. I am grateful for the kindness of Dr. Wollaeger and his colleagues, who made their results known to us prior to publication.

REFERENCES

Almy, T. P. (1951). *Ann. intern. Med.*, **34**, 1041.
Bavetta, L., Hallman, L., Deuel, H. J., and Greeley, P. O. (1941). *Amer. J. Physiol.*, **134**, 619.
Bergner, G. E., Lewis, R. A., Stout, F. W., Thorn, G. W., and Emerson, K. (1948). *J. clin. Endocrinol.*, **8**, 606.
Black, D. A. K. (1946). *Lancet*, **2**, 671.
Fourman, L. P. R., Higgins, G., Quelch, P., O'Brien, J. R. P., and Witts, L. J. (1948). *Clin. Sci.*, **7**, 121.
Frazer, A. C. (1946). *Physiol. Rev.*, **26**, 103.
—— (1949). *British Medical Journal*, **2**, 769.
Gloor, H. U. (1930). *Folia Haemat., Lpz.*, **39**, 373.
Kamer, J. H. van de, ten Bokkel Huinink, H., and Weyers, H. A. (1949). *J. biol. Chem.*, **177**, 347.
Leishman, A. W. D. (1945). *Lancet*, **2**, 813.
Taylor, A. B., Comfort, M. W., Wollaeger, E. E., and Power, M. H. (1951). *J. clin. Invest.*, **30**, 678.
Thaysen, Th. E. H. (1932). *Non-tropical Sprue*, p. 64, Oxford Univ. Press, London.

A recent letter in *Country Life* has the title "Causes of Death in 1711," and gives an account of how a list of old christenings and burials, with causes of death, was found pasted inside the door of a William and Mary marquetry long-case clock. The list refers to London only, and is taken from the reports of the various parish clerks. It covers the year December 12, 1710, to December 11, 1711, during which it records 14,706 christenings and 18,874 burials. Some of the diagnoses of deaths are probably fairly reliable—for example, smallpox 915, death in childbed 195, and perhaps "stoppage in the stomach 255," rickets 196, and "jandies" (jaundice) 51. But "cancer" is given as only 75, and presumably means externally visible tumours, whether malignant or not, while "rheumatism" numbers 9 and scurvy 2, and the label in these cases is obscure and probably misleading. Some of the causes of death sound very odd to the modern ear. Such are Grief (9), Griping in the Guts (614), Lethargy (7), Melancholy (1), Surfeit (61), and Teeth (1,013).

MERCURY NEPHROSIS IN YOUNG CHILDREN

WITH SPECIAL REFERENCE TO TEETHING POWDERS CONTAINING MERCURY

BY

VERA K. WILSON, M.Sc.

M. L. THOMSON, M.D., F.R.C.P.

AND

A. HOLZEL, M.D., D.C.H.

(From the Royal Manchester Children's Hospital)

Mercury poisoning occurs in acute and chronic forms. In acute mercury poisoning there is severe injury to the kidney. Although oedema is usually prevented by the violent diarrhoea which is present, the urine has a high content of albumin and shows a picture similar to that found in nephrosis. Histologically there is necrosis of the epithelial cells of the tubules, and toxic changes occur in the glomeruli. In chronic mercury poisoning the symptoms vary according to whether the mercury is in the form of inorganic or organic compounds or whether mercury vapours are produced (Leschke, 1934). Inhalation of organic compounds or metallic mercury vapours causes, above all, nervous symptoms, whereas the ingestion of mercury salts causes intestinal and renal disorders.

Individual sensitivity to mercury varies widely. The nephrotic syndrome in children is mentioned by Fanconi *et al.* (1947) as an occasional late manifestation of mercury poisoning resulting from worm powders containing calomel. The possibility of mercury nephrosis resulting from prolonged administration of mercury-containing compounds, such as most varieties of teething powders, has not, however, been recognized. These teething powders each weigh approximately 2 to 2.8 gr. (130–180 mg.), the weight varying with the brand, and contain 27% to 33% of calomel, the content of metallic mercury being 0.59 to 0.64 gr. (38–42 mg.). Over long periods, therefore, the amount of mercury administered is considerable, and, since the patients are usually infants or toddlers, it is not surprising that chronic mercury poisoning may result even in children who are not unduly sensitive to mercury.

During investigation of cases of pink disease, one patient with nephrosis was found by one of us (V.K.W.) to be excreting large amounts of mercury in the urine. On this evidence we decided to examine the urine for mercury in further cases of nephrosis. Five cases with an excess of mercury in the urine have been found during recent months.

Case 1

A boy aged 21 months was admitted to hospital on November 20, 1950, with a history suggestive of pink disease of five weeks' duration. He had been given teething powders each containing approximately 0.64 gr. (42 mg.) Hg in the form of calomel over a period of 18 months. At first three to four powders a week were given, but more recently one to two powders a month.

On examination both legs were swollen and puffy from the knee downwards, the oedema increasing over the dorsum of the feet. The urine was loaded with albumin. No casts were found. There was 1 red cell per high-power field The urine contained 102 γ Hg per 100 ml., and the serum cholesterol was 585 mg. per 100 ml. The diagnosis of nephrosis possibly due to chronic mercury poisoning was made. On December 3 treatment with dimercaprol (B.A.L.) was started, being completed on December 11. On the sixth day of treatment the urine contained 82 γ Hg per 100 ml. Ten days later the urine contained 98 γ Hg per 100 ml. During treatment the albuminuria decreased gradually, and after its completion was hardly detectable. The Esbach readings fell from 1.5 g. per litre to 0.02 g. per litre.

There was a dramatic improvement in his general condition, and he was discharged well on January 3, 1951. When seen in the out-patient department on March 5 the urine contained no mercury. He was seen at monthly intervals for a period of eight months, when, apart from a persistent sinus infection, he appeared well. There was no recurrence of the oedema and no albuminuria. Biochemical details are given in Table I.

TABLE I.—*Case 1*

Date	Blood Urea mg./100 ml.	Blood Cholesterol mg./100 ml.	Serum Proteins			Plasma Chlorides mg./100 ml.
			Total g.%	Alb. g.%	Glob. g.%	
21/11/50 ..	25					
28/11/50 ..	—	585	6·64	2·60	4·04	658
1/3/51 ..		204	8·25	5·75	2·50	

Case 2

A girl aged 3½ years was admitted to hospital on January 15, 1951, with a history of swelling of the limbs and face for three days. The child had been off colour for six months with anorexia and loss of weight. During this time there had been attacks of diarrhoea, with the passage of four to five watery offensive stools daily and occasional abdominal pain. One week before admission the condition deteriorated and the child became oedematous.

On examination there was generalized oedema; the systolic blood pressure was 105 mm. Hg by palpation. The urine contained albumin (+++) but no blood; otherwise the examination was negative. When mercury was found in the urine the parents were interviewed again to discover its source. No teething powders containing mercury had been given, but the child had received three grey tablets daily for the past five months for "liver trouble." These tablets each contained ¼ gr. (32 mg.) Hg—i.e., approximately 15 g. Hg had been taken in five months.

Treatment with dimercaprol was started on January 25, 36 mg. being given intramuscularly four-hourly for 48 hours and 36 mg. daily for 10 days. The child became extremely ill and dehydrated as a result of vomiting and diarrhoea, and required energetic treatment with intravenous plasma and saline during the next few days. The oedema rapidly subsided, and 11 days after dimercaprol was started the albumin had completely disappeared from the urine. The diarrhoea gradually subsided and the stools became formed on March 5. Before treatment the urine contained 200 γ Hg per 100 ml. The albumin precipitate was separated and mercury estimations were done on the precipitate and the filtrate. Nearly all the mercury (175 γ) was found in the precipitate—only 25 γ in the filtrate. After four days' treatment with dimercaprol the urine contained 150 γ per 100 ml.

TABLE II.—*Case 2*

Date	Blood Urea mg./100 ml.	Serum Cholesterol mg./100 ml.	Serum Proteins			Plasma Chlorides mg. NaCl per 100 ml.	Plasma CO_2 Vols. %	Urea Clearance. % Average Normal Function
			Total g.%	Alb. g.%	Glob. g.%			
20/1/51 ..	25	640						
27/1/51 ..	24		4·09	1·03	3·06			
31/1/51 ..						459	38	
7/2/51 ..		260				503	57	63
8/2/51 ..		210						

(130 γ in precipitate; 20 γ in filtrate). After 12 days' treatment the urine contained 28 γ per 100 ml. Eleven days later the mercury in the urine was 20 γ per 100 ml., and a fortnight later it was 8 γ. The child made an uninterrupted recovery. Other biochemical investigations are shown in Table II.

Case 3

Ten days before the admission to hospital of a boy aged 11 months the mother noticed that his eyelids were swollen in the morning. Four days later the feet and ankles began to swell, and in a few days the abdomen became swollen. The child was admitted to hospital on July 20, 1951. There had been no diarrhoea or vomiting. On examination there was generalized oedema, and the urine contained albumin (+++) (Esbach, 14 g./litre). Hyaline and granular casts were present and there were more than 50 red cells in the centrifuged deposit. On admission no inquiry had been made about mercury. On recalling the parents it was found that the child had been given one teething powder on alternate days for the past five months. These powders each contained approximately 0.64 gr. (42 mg.) Hg in the form of calomel, so that about 3.1 g. Hg had been given in that period. Treatment with dimercaprol was started on July 28, 20 mg. being given intramuscularly four times daily for two days, 20 mg. twice daily for one day, and 20 mg. daily for 10 days. There was marked diuresis, and the loss of weight which occurred is shown on the Chart.

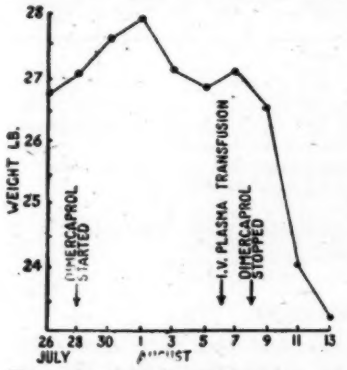


Chart showing the marked loss of weight which followed treatment of Case 3 with dimercaprol.

Before treatment the urine contained 75 γ Hg per 100 ml. A few days after dimercaprol was started the mercury content rose to 120 γ per 100 ml. Seven days later the urine contained 28 γ Hg. Three weeks later it contained 9 γ Hg. The child was given two intravenous plasma transfusions, one during the course of treatment with dimercaprol and the second a week later. During the five days after dimercaprol was stopped the child lost about 3½ lb. (1.59 kg.) in weight and the oedema was much diminished. A few days later the oedema recurred to some extent, but a fortnight afterwards no oedema could be detected though the urine still contained some albumin (Esbach, 1 g./litre). In view of the persistent slight albuminuria and the fact that the mercury content of the urine had risen to 24 γ per 100 ml. a further course of dimercaprol was started on September 24. Two days after this course was begun the urine contained 260 γ Hg per 100 ml., and six days later 58 γ Hg. As the child had had a patch test (in which a small amount of ointment containing 13% calomel was applied to the skin for 48 hours) we felt it necessary to find out if this test had affected the amount of mercury excreted. A similar patch test (mercury content approximately 5,000 γ) was applied to a normal baby of the same age for 48 hours. This baby's urine contained no mercury before the patch test, but 24 hours after its application the urine contained 6 γ per 100 ml. Twenty-four hours later the urine contained 2 γ. Four days later no mercury was detected, but two days later the urine contained 4 γ Hg. These tests are not strictly comparable, since the normal baby was not receiving dimercaprol. In neither case was the skin test positive. About 21 days after the second course of dimercaprol the urine became free of albumin and the child was discharged well.

TABLE III.—*Case 3*

Date	Blood Urea mg./100 ml.	Serum Cholesterol mg./100 ml.	Serum Proteins		
			Total g.%	Alb. g.%	Glob. g.%
20/7/51	26				
22/7/51		520	4·40	1·58	2·82
10/8/51	33				
27/8/51	42				
3/9/51	28				
24/9/51	24				

Case 4

Two weeks before his admission to hospital the mother of a boy aged 12 months noticed that his eyelids were swollen. Two days before admission the abdomen, penis, and legs became swollen. For a week little urine had been passed and there was marked thirst. There had been no diarrhoea. The child was admitted on September 14, 1951. On examination there was generalized oedema and the urine contained albumin (++). Scanty hyaline casts were present and a few red cells. This child had been given one teething powder on alternate days for the past six months. These powders each contained approximately 0.64 gr. (42 mg.) Hg in the form of calomel—i.e., approximately 3.8 g. Hg had been taken in six months. On September 20 the urine contained 52 γ Hg per 100 ml. No dimercaprol was given in this case. On admission the child's weight was 26 lb. 14 oz. (12.2 kg.). The oedema decreased rapidly, and in the course of 10 days cleared completely. On October 4 his weight was 20 lb. 12 oz. (9.4 kg.). A week later the weight was 19 lb. 12 oz. (9 kg.), and the general condition was greatly improved. Nine days later vomiting and diarrhoea occurred for a few days. On October 24 the urine contained 44 γ Hg per 100 ml. Microscopy of urine was negative and no albumin was present. The infant was discharged well on October 25 and without any renal abnormality. He has since remained well. Other biochemical investigations are shown in Table IV.

TABLE IV.—*Case 4*

Date	Blood Urea mg./100 ml.	Serum Proteins		
		Total g.%	Alb. g.%	Glob. g.%
17/9/51	30			
19/9/51		6·48	3·06	3·42
15/10/51 ..		6·74	4·20	2·54

Case 5

We are indebted to a colleague for the following case history.

A child aged 19 months was admitted to hospital with generalized oedema which had been present for three days and with marked albuminuria. Despite routine treatment for a month the oedema and albuminuria persisted unabated. At this point the possibility of a mercury nephrosis was raised, and an interview with the parents uncovered the fact that one teething powder had been given daily for three to four months before admission. Each powder contained approximately 0.56 gr. (36 mg.) Hg. Urine for mercury estimation, obtained with difficulty, was found to contain 22 γ Hg per 100 ml. Unfortunately the child deteriorated rapidly and died before treatment with dimercaprol could be started. Permission for necropsy was refused. We believe that this was a case of mercury nephrosis.

The method used for the mercury estimations was essentially that of Milton and Hoskins (1947). The mercury content of the urines of 12 normal children was estimated by the same method for use as controls. In nine of these no mercury was found in the urine. One had 1 γ Hg per 100 ml. of urine and the other two had 3 γ Hg.

Discussion

The mercurial compounds given to these children are in common use, but the danger of causing nephrosis by their prolonged ingestion is not recognized. In three of the cases

no inquiry had been made about the administration of mercury compounds at the first interview with the parents, so that the possibility that mercury was the cause of the nephrosis would not have come to light had our suspicions not been previously aroused. Our experience with Case 3 shows that a considerable amount of mercury may remain in the body for long periods and that more than one course of dimercaprol may be necessary to eliminate it adequately. If the treatment with dimercaprol is instituted promptly complete recovery of renal function is possible. Cast 4 shows that in some cases spontaneous recovery may occur when the intake of mercury is stopped, though its excretion may continue for relatively long periods. On the other hand, Case 5, in which no dimercaprol was given, proved fatal.

In view of these findings we urge that mercury compounds should be eliminated from all teething powders and that other mercury compounds, such as grey pills, be used with care, and prolonged administration be avoided in young children. Teething powders not containing mercury are free of the risks we have described.

Summary

Five cases of mercury nephrosis are described. Complete recovery in a short period in three cases treated with dimercaprol is reported. Of two cases not treated with dimercaprol one patient recovered and one died.

We are indebted to the resident medical and nursing staffs who have cared for these children while in hospital, to Miss J. Summerscales for assistance with the mercury estimations, and to Miss P. M. Gorse for routine biochemistry in some of the cases.

REFERENCES

Fanconi, G., Botsrtejn, A., and Schenker, P. (1947). *Helv. Paediat. Acta*, Suppl. 4, 2, 3.

Leschke, E. (1934). *Clinical Toxicology*, pp. 32-57. Churchill, London.

Milton, R. F., and Hoskins, J. L. (1947). *Analyst*, 72, 6.

FATAL HYPOKALAEMIC ALKALOSIS WITH TETANY DURING LIQUORICE AND P.A.S. THERAPY

BY

N. J. ROUSSAK, M.B., B.Sc., M.R.C.P.

Medical Registrar, Manchester Royal Infirmary

This is a report on a patient who, while receiving treatment for tuberculous meningitis, developed unexplained electrolyte abnormalities, from which she died. Papers published subsequently have thrown light on the mechanism of her death.

Case Report

A girl aged 15 received a full course of streptomycin for miliary tuberculosis with tuberculous meningitis, and was discharged from hospital on February 24, 1950, having made a satisfactory recovery. She was seen at intervals as an outpatient, and gained weight and strength. On May 27 she was readmitted with a recurrence of the meningitis, and was treated with intramuscular and intrathecal streptomycin and sodium *para*-aminosalicylate (P.A.S.). The P.A.S. was given in a mixture containing 2 g. of sodium *para*-aminosalicylate and 12 min. (0.72 ml.) of ext. glycyrrh. liq. *B.P.*, and the dose was increased gradually to 20 g. daily. About 595 ml. of ext. glycyrrh. liq. was taken over the whole period. The meningitic symptoms showed signs of improvement, but on August 3 she complained of stiffness of her arms and legs, and there was twitching of the face. Later in the day she was reported to have had two epileptic attacks.

There were no further attacks during the next two weeks, during which phenobarbitone was prescribed, but stiffness was still a complaint. About August 24 muscular cramps occurred, and it was plain that she was having severe tetany, with carpopedal and facial spasm, and slight respiratory difficulty. There was no evident hyperpnoea. The serum calcium was found to be low (7.5 mg. per 100 ml.), and plasma alkali reserve 82 vols. CO_2 per 100 ml. The urinary calcium was normal as judged by Sulkowitch's reagent. Repeated administration of calcium gluconate intravenously had only a transient effect on the attacks of tetany, which increased in duration, and Trousseau's sign was constantly positive. On August 27 the electrocardiogram showed ST depression as occurs in hypokalaemia. On three occasions generalized convulsions with opisthotonos occurred during severe attacks of tetany. She gradually became weaker, with rapid shallow respirations, and died on September 2. The biochemical findings on the last two days of life were those of a hypochloraemic hypokalaemic alkalosis, and are shown in the Table.

Date	Plasma CO_2 Vols./100 ml.	Serum K mg./100 ml.	Plasma Cl mg./100 ml.	Serum Ca mg./100 ml.	Serum Na mg./100 ml.	Serum Inorganic Phosphorus mg./100 ml.
Aug. 25	82		374	7·5		
,, 26	82		410			
,, 28	82	13	386	8·5	345	3·7
,, 30			386	8·5		
,, 31	92	13	421		345	

On August 28 the serum alkaline phosphatase was 5 K.-A. units. On August 31 the serum albumin was 2·1 g.% and globulin 3 g.%.

At the post-mortem examination there was evidence of active tuberculous meningitis.

Discussion

One month after this patient had died, Borst *et al.* (1950) showed that liquorice had a deoxycortone-like action, and Strong (1951) has reported that two patients with tuberculosis who received P.A.S. flavoured with liquorice developed tetany with similar electrolyte findings to those of my patient. Also, Strong was informed by Cayley, who had recorded the development of hypokalaemia in three patients having P.A.S. (Cayley, 1950), that liquorice had also been given in his cases.

There seems to be good circumstantial evidence that liquorice was responsible for the electrolyte changes shown by these patients and the fatal case here recorded. The tetany seems to have been less severe in the cases reported by Strong than in the present case. His patients, although having cramps and positive Trousseau's sign, had a negative Chvostek's sign, but my patient had facial, carpopedal, and laryngeal spasm, with convulsions. The low serum calcium was due to the hypoalbuminaemia (2.1 g. of albumin per 100 ml.). The presence of a normal urinary calcium, as estimated by Sulkowitch's reagent, suggests that the diffusible calcium was normal in amount in the serum. Thus the tetany was unrelated to the low serum calcium.

Hypochloraemic hypokalaemic alkalosis is found in Cushing's syndrome and can be produced in man by cortisone, but the only evidence I can find of its production by D.C.A. is recent work by Seldin *et al.* (1951). These workers suggest, as a result of experiments, that D.C.A. has no direct effect on the renal excretion of potassium, but that a potassium diuresis may follow D.C.A. administration as a passive consequence of sodium retention. They were able to produce a hypochloraemic hypokalaemic alkalosis by D.C.A. if sodium was given freely, and in fact my patient was receiving the sodium salt of P.A.S., and was later given intravenous sodium chloride because of the hypochloraemia. Tetany is not mentioned by these workers, nor in reports of cortisone toxicity, and in fact the low serum potassium would make the occurrence of tetany unlikely. Tetany in

other forms of metabolic alkalosis is, of course, well recognized. The P.A.S. could hardly have produced the observed electrolyte changes, because salicylate causes a respiratory alkalosis, with low alkali reserve, but the addition of a mild respiratory alkalosis to the metabolic alkalosis caused by the liquorice would favour the occurrence of tetany.

It is understood that difficulty has been found in producing electrolyte abnormalities experimentally with some preparations of liquorice, and it is possible that there may be a variation in the D.C.A.-like activity of different batches of liquorice extract.

It is interesting that the urinary chloride concentration, estimated by the Fantus test, remained very high (4–8 g. per litre) throughout the last week, contrary to what one might expect from the combined effects of hypochloraemia, alkalosis, and D.C.A.-like liquorice. In fact, this is often found in hypokalaemia, as Fourman (1951) points out.

Summary

A patient receiving sodium *para*-aminosalicylate for tuberculous meningitis developed a metabolic alkalosis, from which she died.

Liquorice, used as a flavouring agent with the P.A.S., appears to have been responsible.

I am grateful to Dr. N. Kletts for permission to record this case. My thanks are also due to Mr. Varley for the biochemical determinations, and Dr. D. A. K. Black for helpful advice.

REFERENCES

Borst, J. G. G., Gerbrandy, J., Jong, J. C. de, Lenstra, J. B., Molhuysen, J. A., Turner, K. P., and Vries, L. A. de (1950). *Lancet*, 2, 381.
Cayley, F. E. de W. (1950). Ibid., 1, 447.
Fourman, P. (1951). *British Medical Journal*, 2, 1284.
Seldin, D. W., Welt, L. G., and Cort, J. (1951). Paper read to American Society for Clinical Investigation. Abstracted in *J. clin. Invest.*, 1951, 30, 673.
Strong, J. A. (1951). *British Medical Journal*, 2, 998.

CASE ILLUSTRATING HAZARDS OF MANIPULATIVE TREATMENT IN LUMBO-SACRAL DISK PROTRUSIONS

BY

ROBERT HAFNER, F.R.C.S.

Orthopaedic Registrar, St. Peter's Hospital, Chertsey

A recent experience having a bearing on the practice of manipulation of the spine for lumbo-sacral disk lesions seems worth recording.

Case Report

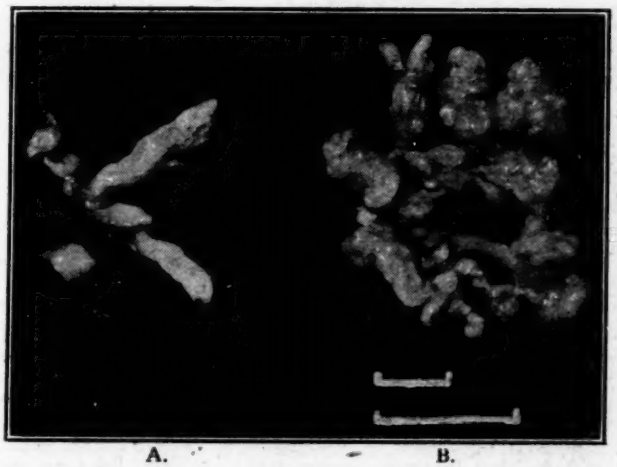
A man aged 36 who was engaged in heavy work had a sudden onset of low-back pain spreading down the back of his right leg to the foot. There was a past history of two previous similar attacks. A radiograph of the lumbo-sacral spine showed the L.5/S.1 joint space to be diminished posteriorly; otherwise there was no abnormality.

The patient was suffering from a protrusion of an intervertebral disk of the lumbo-sacral spine. The physical signs did not alter during five weeks' rest in bed, although the symptoms were definitely diminished. He was encouraged to move his back under intravenous procaine analgesia (5 ml. of a 1% solution of procaine). Although only 30 degrees of flexion was allowed he suddenly experienced very severe pain down the back of his right leg, which caused him to cry out. Morphine was necessary. Flexion of the spine and raising of the straight leg were not possible. The pain continued for 48 hours, until laminectomy was performed.

At operation the cauda equina was displaced backwards by a large disk protrusion, over which the first sacral root was tightly stretched. Furthermore, deep to this, in the intervertebral space, was a considerable quantity of "sequestrated" nuclear material, lying free and comprising the remainder of the nucleus pulposus. This could have been forced into the spinal canal by pressure resulting from increased movement of the spine. The operative findings are illustrated in Fig. 1; the disk material after removal is shown in Fig. 2.

FIG. 1.—Diagrammatic representation of the operative findings.

Follow-up Report.—On the day after operation, February 12, 1951, the patient was free from pain but had some numbness of the right foot. He remained free from symptoms and was allowed up 17 days after operation. He was discharged to his own home on March 5, and returned on April 2 to the same heavy work that he had been doing pre-operatively. He has since been at this work, and when last seen (September 16) he was symptom-free.



A. B.

FIG. 2.—(A) The disk material lying free in the spinal canal, and (B) the disk material in the intervertebral space. Marked distances equal 1 cm. and 2 cm.

Commentary

The increased flexion of the spine forced more disk material into the spinal canal, exaggerating the symptoms and signs of lumbo-sacral root pressure. The operative findings of more "free" nuclear material lying ready to enter the spinal canal demonstrates that had more flexion been obtained, as in a forceful manipulation for instance, the size of the "tumour" in the spinal canal might well have produced a cauda-equina lesion.

Although it is not our practice to use manipulation in the treatment of lumbo-sacral disk lesions, we considered the possibility that we were dealing with an uncommon type in which the extruded disk material was nipped by the posterior margin of adjacent vertebral bodies and so prevented from returning. We wondered if the muscular relaxation and increased movement of the spine, made possible by analgesia, would result in sufficient widening of the intervertebral space to allow the prolapse to reduce spontaneously.

It is interesting to recall Goldthwait's (1911) report of a case made worse by manipulation. The following is a brief extract.

A man aged 39 developed a severe attack of "lumbago" after a fairly long car journey and carrying a heavy suitcase for over half a mile. A previous similar attack seven years before had been treated with a surgical corset and had resulted in complete recovery. After a restless night the patient got up and took a tub bath. "On trying to get out of the tub, in bending forward and straining to get up, something slipped in his back, entirely different from anything he had before experienced. The body was drawn forward and to the left; there was intense pain, so that it was with great difficulty that he was able to get back to his room, and the suffering continued until he was seen by the doctor four hours later. At that time the body was held bent forward and to the left. There was extreme tenderness in the sacral region, with pain extending into the legs, the right being worse than the left." The condition was regarded as a sacro-iliac displacement and two manipulations were given, the first under general anaesthesia and the second without an anaesthetic. A cauda-equina lesion was produced, the patient having urinary and faecal incontinence and a flaccid paraplegia.

The case stimulated Goldthwait to much thought and research, from which he concluded that intervertebral disk prolapse played a large part in the production of "lumbago," "sciatica," and cauda-equina lesions.

I wish to thank Mr. B. H. Burns and Mr. R. H. Young for their permission to publish this case, treated under their care at St. Peter's Hospital, Chertsey.

REFERENCE

Goldthwait, Joel E. (1911). *Boston med. Surg. J.*, **164**, 365.

Medical Memoranda

Prostatic Obstruction and Inguinal Hernia: A New Approach

Straining at micturition and the weakening of the tissues which accompany advancing age are well-recognized factors in the aetiology of inguinal herniae. It is not surprising, therefore, that cases of prostatic obstruction are often complicated by herniae. McDonald and Huggins (1949) found the incidence to be 15%. These herniae are liable to the serious complication of strangulation, itself a more lethal malady than prostatic obstruction. It thus behoves the surgeon to cure both conditions.

Now that asepsis, stressed by me (Moore, 1939) and by Wilson Hey (1945), has been more generally observed in urology, prostatectomy has become a safe operation. Wilson Hey has already stated that it can be safely combined with other procedures, including herniorrhaphy. It has become my routine to deal with the inguinal hernia at the same time as the prostate. For this reason, when the patient has a hernia I recommend open operation, even in those types of prostatic obstruction in which I would normally carry out a transurethral procedure. For the past 12 years I have used almost entirely only the transverse suprapubic incision for operations on the prostate and bladder. Through this incision I also carry out inguinal herniorrhaphy—often on both sides.

Although many patients who present with prostatic obstruction are found on examination to be suffering from inguinal hernia, one also encounters cases of inguinal hernia in old men who make no complaint of urinary symptoms. On direct inquiry and investigation many are found to be suffering from prostatic obstruction. If the prostate is not treated they often develop post-operative retention of urine which fails to respond to conservative measures. Eventually they have to be submitted to prostatectomy, in either one or two stages, with all the dangers of the sepsis which has developed during the interval. There is no question that the period in hospital after a one-stage operation dealing with both conditions is far shorter than that following prostatectomy performed some time after herniorrhaphy. In fact, the period in hospital after a combined prostatectomy and herniorrhaphy is no longer than that after a prostatectomy alone.

TECHNIQUE

In old bad-risk cases I always employ low spinal anaesthesia and a local block of the abdominal wall. A transverse incision 4–6 in. (10–15 cm.) long is made a finger-breadth above the pubis. If only a one-sided hernia is to be done more of the incision is placed on that side of the midline. The skin, superficial and deep fascia, and the anterior rectus sheaths are opened in the line of the incision, which extends a little lateral to the rectus into the aponeuroses of the external and internal oblique muscles on the side of the hernia. In the midline the rectus sheath is separated from the linea alba down to the pubis and up towards the umbilicus for 2–3 in. (5–7.5 cm.). The rectus muscles are then separated in the midline and the type of prostatectomy preferred is carried out. In my practice this is almost always a Millin prostatectomy.

When this procedure has been completed the retractors are removed and the muscles allowed to fall together. The inguinal canal is then approached lateral to the rectus muscle between the internal and external obliques, where they are fusing to form the rectus sheath. When these are gently separated the arching fibres of the internal oblique forming the cremasteric muscle are soon visible. These are divided in the length of the canal and the cord and its contents exposed. The sac, whether direct or indirect, is dissected free and dealt with in the ordinary way. If the canal is weak and requires strengthening, any of the usual methods can be used. When the Bassini procedure or one of its modifications is adopted it is evident that the conjoined tendon can be brought down to the inguinal ligament with much less tension than in the more direct approach, because the internal oblique has already been incised at the level of the suprapubic wound. It is important in closing the transverse incision that the upper leaves of the external and internal obliques should be sutured to the lower one of the external oblique only, otherwise the relaxation of the internal oblique already obtained is lost. During the operation I often divide the vas as near the external ring as possible, preferably on the external side. Before the wound is finally closed the cave of Retzius is usually, but not always, drained.

Post-operative Course.—Sulphadimidine, 1 g. six-hourly, and penicillin, 200,000 units intramuscularly eight-hourly, are given two days before the operation, and are continued for five days after it. In cases with urinary infection due to organisms insensitive to these agents streptomycin is sometimes used, 0.5 g. being given by intramuscular injection 12-hourly for four to five days. Normally, patients are allowed up on the second day after operation. The cave of Retzius drain is also removed on that day. The catheter is removed on the fifth day. When a hernia has been done at the same time as the prostatectomy the patient is usually kept in bed for seven days. Patients are discharged from hospital 10 to 12 days after the operation.

COMMENT

I have carried out this operation many times and have had no cause to regret it. Many of the patients have been of the poor, old, municipal-hospital type. The results of the cures of the herniae have been as good as those obtained by any method of treatment in people of this age. The patients are delighted to get rid of their ruptures at the same time as their urinary trouble; surgically they are very much safer. It may be objected that leakage of urine may lead to infection

of the inguinal canal. In modern prostatectomy, however, practically speaking, no leakage occurs. Whatever theoretical objections may be raised against the method, in practice it works.

THOMAS MOORE, M.D., M.S., F.R.C.S.,
Consultant Surgeon, Altrincham General Hospital, and Withington Hospital, Manchester; Honorary Consultant Urologist, Manchester Royal Infirmary.

REFERENCES

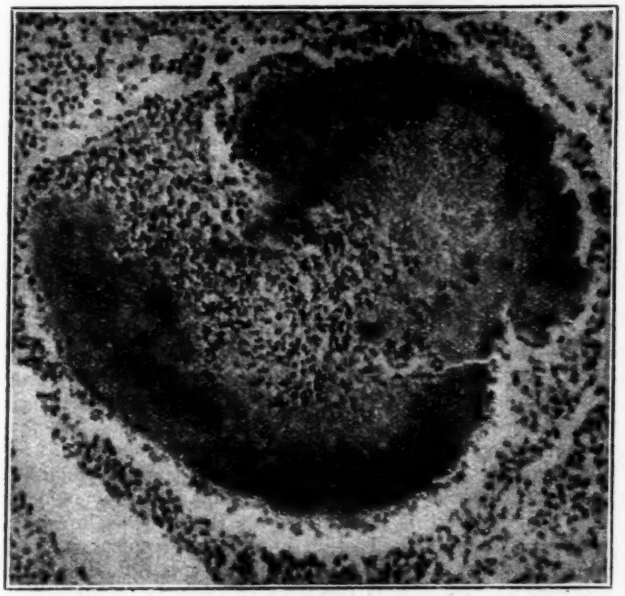
Hey, Wilson H. (1945). *Brit. J. Surg.*, 33, 41.
McDonald, D. F., and Huggins, C. (1949). *Surg. Gyneo. Obstet.*, 89, 621.
Moore, Thomas (1939). *Brit. J. Urol.*, 11, 233.

Paralaryngeal Actinomycosis in a Child

Actinomycotic infection in childhood is a rarity. The following case is of interest in view of the mode of presentation, the early stage at which actinomycotic infection was discovered, its occurrence in a rarely encountered site of the cervico-facial region, and the peculiar eosinophilic inflammatory reaction.

CASE REPORT

The patient, a girl aged 8, attended as an out-patient under Mr. W. R. S. Hutchinson on March 4, 1950. She had had a small painless left-sided cervical swelling for the past four months, clinically diagnosed as tuberculous adenitis. There



Photomicrograph of abscess, showing felted mass of actinomycotic hyphae lying within.

was no history of any serious illness or contact with tuberculosis, and she was otherwise quite healthy. *X*-ray films of the chest revealed nothing abnormal, the mouth and upper respiratory passages were free from disease, and there were no carious teeth.

On April 4 she was admitted for removal of the supposed lymph nodes. At operation, performed by Mr. B. Courtice, a mass, approximately 1 by ¾ in. (2.5 by 1.9 cm.), was found in the lower half of the anterior triangle of the neck lateral to the trachea and the infrahyoid muscles deep to skin, which was not involved, and deep to the cervical fascia. It was not encapsulated. A fibrous band was found passing from the mass upwards in the neck towards the angle of the jaw.

Histological examination revealed that the mass was not of lymph nodes, but consisted of fibro-muscular tissue surrounding a small central abscess. Lying within the abscess was a discrete felted mass of actinomycotic hyphae (see illustration). The surrounding cellular reaction infiltrating the muscle around showed polymorphs, lymphocytes, and plasma cells, with a strikingly large number of eosinophils. Numerous further sections of the tissue submitted failed to reveal any other actinomycotic masses.

Investigations into the staining reactions of the organism were limited by the minute amount of available material. It was found to be Gram-positive, non-acid-fast. An unsuccessful attempt was made to culture the organism from a slight discharge from the wound following its discovery in the abscess. The child was treated with penicillin, 500,000 units daily for three weeks. The wound healed rapidly, and so far there has been no recurrence.

COMMENT

It is suggested that the case was one of the primary paralaryngeal or parapharyngeal group of cervical actinomycosis first described by Hoffmann (1906). The situation in the neck, the absence of any external wound or history of trauma in this region, and the lack of any evidence of actinomycosis in the mouth or elsewhere in the neck all fall in with this view.

Hoffmann's first case presented sinus formation and swelling of the arytenoid cartilages; in 1909 he described a further nine cases of paralaryngeal actinomycosis and stated that laryngeal involvement was not constant. Beysiegle (1933) found in the literature 19 cases of laryngeal actinomycosis and considered that there were very few cases of actinomycosis of the neck related to the larynx without evidence of perichondritis. Vogel (1935), in a review of 14 cases, describes one case without involvement of the skin or of the larynx. Peter Childs (1948) describes a case of paralaryngeal actinomycosis without involvement of skin or larynx which he considers to be only the second to be recorded. Both Hoffmann and Vogel found paralaryngeal cases commoner on the left side, adding that lymph-node involvement was not a feature, and that there was no relation to carious teeth. Lamb, Lain, and Jones (1947) review cervico-facial actinomycosis. They mention the rarity of primary cervical cases, restricting this group to cases in which infection does not obviously spread from neighbouring mucous membrane or from systemic infection. They describe one primary case only, and in this the patient had infiltration at the base of the left lung, which may have been actinomycotic.

There are three views on the mode of entry of the fungus in the paralaryngeal group: (1) Entry through the lateral pharyngeal wall via the inferior constrictor muscle is suggested by Hoffmann; he constantly found an indurated band from the angle of the jaw to the upper end of the swelling in the neck. This band was found in my case. (2) Entry via the tonsils is suggested by Vogel. (3) Schütz (1938) concludes that infection travels directly through the mucous membrane of the pharynx or hypopharynx. The point of entry of the organism in my case is unknown.

As to why a parasitic organism becomes pathogenic, Mathieson *et al.* (1935) suggest that it results from repeated absorption of toxins, ultimately causing allergic sensitization. The very marked eosinophilic cellular reaction which was so striking a histological feature in my case may be relevant to this view.

I am grateful to Dr. S. C. Dyke and Dr. J. T. Duncan for advice. Acknowledgment is also made to Mr. W. R. S. Hutchinson for permission to publish the case.

D. F. DAVIES, M.B., M.R.C.P.,
Senior Registrar,
Royal Hospital, Wolverhampton.

REFERENCES

Beysiegle, K. (1933). *Int. Zbl. Ohrenheilk.*, 36, 157.
Childs, P. (1948). *Brit. J. Surg.*, 35, 429.
Hoffmann, R. (1906). *Münch. med. Wschr.*, 53, 449.
—— (1909). *Z. Ohrenheilk.*, 58, 156.
Lamb, J. H., Lain, E. S., and Jones, P. E. (1947). *J. Amer. med. Ass.*, 134, 351.
Mathieson, D. R., Harrison, R., Hammond, C., and Henrici, A. T. (1935). *Amer. J. Hyg.*, 21, 405.
Schütz, W. (1938). *Z. Hals- Nasen- u. Ohrenheilk.*, 43, 296.
Vogel, K. (1935). *Z. Laryng. Rhinol. Otol.*, 26, 263.

Reviews

THE OLD AND INFIRM

Adding Life to Years. By Lord Amulree, M.D., F.R.C.P. Preface by Alderman Fred Messer. (Pp. 101; illustrated. 8s. 6d.) London: National Council of Social Service. 1951.

Administrative changes are usually advocated because it is hoped they will solve old problems; they are resisted because it is feared they may create new ones. As a rule both hopes and fears prove to be well grounded, and whether on balance changes are worth while depends, not upon their complete success, but upon whether the new problems prove to be less intractable than the old ones.

In so far as they relate to the welfare of old people, recent changes in medical and social administration run true to type, although at first sight it may appear easier to identify the problems created than the problems solved. The new problems have resulted from the division between two bodies—regional hospital boards and local authorities—of responsibility for services formerly vested in a single authority. To the patient seeking admission to a hospital for the chronic sick the loss of "admission as of right" must seem to be a serious fault for which there have as yet been no apparent compensations. But compensations there are, and Lord Amulree's brief but adequate account of the history and present status of services for the aged and chronic sick will help to put them into perspective.

Lord Amulree reminds us that the most serious deficiencies in these services are of long standing; they are rooted in the history of the Poor Law, and were discussed clearly and critically in the Minority Report of the Poor Law Commission of 1905. The remedy then suggested was a breakdown of the old unscientific category of the aged and infirm, with classification of patients and adaptation of services to their medical and social needs. This is still the remedy, and more progress has been made towards applying it in the past five years than in the previous forty. In no small part this progress has been due to the same Acts of Parliament which have created new problems by dividing responsibility between two authorities. The division of responsibility has contributed in two ways: it has given hospital boards a strong motive for classifying patients according to their needs, and it has brought into contact with hospitals for the chronic sick physicians who examine the services there provided in the light of the best standards of the voluntary hospitals. Lord Amulree is one of these, and, although his book is written against the background of a long-standing interest in the welfare of old people, it has profited from his recent experience in starting the first geriatric unit in a teaching hospital at St. Pancras.

THOMAS MCKEOWN.

TEXTBOOK OF PHYSIOLOGY

A Textbook of General Physiology. By Hugh Davson, D.Sc. (Pp. 659; 288 illustrations. £2 5s.) London: J. and A. Churchill. 1951.

Sooner or later the physiologist, pathologist, or clinician goes to the basic sciences to explain his observations and experimental results. He will analyse his work on the intact organism in terms of chemistry or physics.

Dr. Davson has addressed his book to the degree student in physiology and related subjects, to the medical student interested in physiology, and to the mammalian (including human) physiologist wanting to know the underlying fundamentals. Starting with the structural basis of living matter, he discusses the transformations of living systems. Accounts follow of the transport of water and solutes and of the characteristics of excitable tissue and the mechanism of muscle contraction. The whole ends with a section on the effect of light on, and its emission by, the organism.

The book is lucidly written and well illustrated. Those who practise the art of medicine will be pleased that their worries will be solved without undue strain on their mathematical ability. It will be essential to experimental research workers. Unfortunately, the author has not been able to find space for chapters on aqueous humour, synovial fluid, and phototropic phenomena. Two grave omissions are a full discussion of the electronic theory of valency, with its application to physiology and medicine, and discussion of the work of Lohmann and the role of high-energy bonds and the principles of measuring bond energy. Would it be too much to ask that a second edition include these subjects? Perhaps, too, that it should follow a useful American practice and include an index of names?

The book's title invites comparison with Bayliss's *Principles of General Physiology*. This is not fair; though this is a textbook by one of our younger and more brilliant physiologists, "Bayliss" was the matured vintage philosophy of a scholar and pioneer.

A. ST. G. HUGGETT.

ELATION

The Psychoanalysis of Elation. By B. D. Lewin, M.D. (Pp. 200. 15s.) London: The Hogarth Press. 1951.

Psycho-analytic contributions to the study of the psychoses have ranged from some original papers of fundamental importance to a few more ambitious treatises which, however suggestive in outline, are not yet sufficiently precise and detailed to meet the needs of the general psychiatrist. So far very few specialized studies of the great psychotic subgroups have been attempted. Dr. Lewin has broken new ground in this direction. Taking as his subject the comparatively neglected problems of elation, hypomania, and mania, he has reviewed psycho-analytic work in this field, adding a detailed account of his own views and observations on the general function of elation.

His review of the literature is in its way masterly, and both psycho-analysts and general psychiatrists should be grateful for it. The presentation of his own views unfortunately does not come up to the same high standard. It is somewhat confused, a little too dogmatic in its theoretical outline, and shows some of the faults consequent on generalizing from particulars. It also suffers from following too closely the present psycho-analytical fashion of regarding practically all mental manifestations as "defences," to the neglect of their more positive functions both individual and phylogenetic. There is certainly a good deal of "denial" in mania; there is equally certainly a marked oral element in it, just as there is in depression. But two swallows do not make a summer. Elation is in many respects a compound affect of composite origin; and it is not altogether a service to hedge-in its functions in terms of existing and somewhat sketchy hypothetical reconstructions of the reputed minds of sucklings. In particular, Dr. Lewin's correlations between hypomania and sleep are unduly restricted and hampering. Despite these criticisms his book is a valuable one, containing more stimulating ideas to the page than many a more ponderous psychiatric tome. Psycho-analysts will find the second half difficult going and psychiatrists will *a fortiori* find it hard to read. But they should try.

EDWARD GLOVER.

TEXTBOOK OF MEDICINE

Principles of Internal Medicine. Editors, T. R. Harrison, Paul B. Beeson, William H. Resnik, George W. Thorn, and M. M. Wintrobe. (Pp. 1,590; 245 illustrations. £4 10s.) London: H. K. Lewis. 1950.

This massive work is a textbook on a new model and the editors are to be congratulated on the care and thought so evidently devoted to its design and execution. The book begins with a brief but excellent chapter on the approach to the patient. A section follows in which the cardinal manifestations of disease are discussed, and then one on such

physiological topics as fluid and electrolyte balance, intermediary metabolism, and electrophysiology. These sections represent an attempt, which is wholly praiseworthy and largely successful, to integrate the "pertinent content of the preclinical sciences with clinical medicine." The authors' names are sufficient guarantee of the excellence of individual articles: Harrison on "Circulatory Failure," Wintrobe on "Anaemia," and Pickering, this country's sole representative, on "Headache" need only be cited to show the standard which has been set.

Part III is on reactions of the body to stress and antigenic substances. There are general reviews of the reactions to injury, of the psychological reactions to stress, and of the principles of immunity. These are succeeded by more conventional accounts of the clinical pictures which result from these reactions. The rest of the book conforms to the traditional pattern of the textbook of medicine, the diseases of known causation being classified aetiologically and the remainder anatomically. This part of the work maintains the high standard of the earlier section; the descriptions of disease are concise and illuminating; the principles of treatment are set out with precision and economy of detail; and each article concludes with a short bibliography, all of which show careful selection and a commendable lack of national prejudice.

The viewpoint of these writers is entirely to-day's. Probably the book's arrangement would have appeared fantastic to a teacher of medicine in 1900; for the same reason, it is not unlikely that the view of medicine instinct in its design will be outmoded in 1975. Nevertheless it is highly to be commended; there is no book on the market which represents more faithfully the outlook of the physician with a training in experimental physiology, and it is this outlook which dominates academic medicine in the English-speaking world to-day. In spite of its formidable bulk it can be recommended to the student who is in transition from his preclinical to his clinical studies; it will provide a sorely needed bridge between the two.

R. BODLEY SCOTT.

THE GORILLA

The Anatomy of the Gorilla. The Studies of Henry Cushier Raven and Contributions by W. B. Atkinson, H. Elftman, J. E. Hill, A. H. Schultz, W. L. Straus, Jun., and S. L. Washburn. Arranged and Edited by William King Gregory. A collaborative work of the American Museum of Natural History and Columbia University. The Henry Cushier Raven Memorial Volume. (Pp. 260; 116 plates. $15, or £4 17s. 6d.) New York: Columbia University Press. London: Geoffrey Cumberlege. 1950.

The sumptuous manner in which this volume is published must surely be the envy of all those workers in the field of mammalian anatomy who chance to live in lands where lavish grants for the publication of scientific monographs are not available. The volume is published as a memorial to Henry Cushier Raven, a man remarkable for his attainments as a collector and preserver of museum specimens and for the possession of a very charming and modest personality. Unfortunately he did not live to complete his projected monograph on the anatomy of the gorilla, and the preparation of the work for publication was undertaken by the late Dr. John Eric Hill. It is doubtless owing to the untimely death of both the original author and the reviser that the final publication is so regrettably uneven in its contents.

This unevenness is made evident by the fact that there are no figures or description of the central nervous system, nor, save in Schultz's account of the growth of the head, is there even any mention of the brain. The bones, though figured so far as the muscular attachments are concerned, are not described, and the loss of this is felt all the more since in some cases an explanation is surely needed—as, for example, in the figure of the clavicle (Plate 38), where an area for a "costo-clavicular articulation" is marked towards the lateral third of the bone. In this particular instance the absence of any explanatory text is all the more to be regretted, since the very unsatisfying figures of the mounted skeleton throw no light on the matter, and nowhere in the volume is there any reference whatever to articulations. A work that totally neglects descriptive accounts of the osteology, syndesmology, and the whole central nervous system hardly deserves the title under which this volume is published. The illustrations are reproduced in a style that can only be described as magnificent; but again there is the same unevenness of quality. Although many of the drawings of muscles leave little to be desired, some, especially certain of those depicting the viscera (such as Plate 88B), are hardly worthy of reproduction in any manner.

The volume is a triumph of modern book-making; but, if we are honest, we must confess that on closing it there comes a realization that a monograph on the anatomy of the gorilla remains to be written.

F. WOOD JONES.

A DOCTOR'S STORIES

Just a Medley of Amusing Tales and Interesting Medical and Legal Experiences, recorded by An Old Retired Scotch Doctor. (Pp. 80. 5s.) Reigate: George J. Hieatt and Son.

I have read this book with much pleasure. The author tells of his student life in Aberdeen and Vienna, with many interesting stories of his experiences. Later in his 25 years of general practice he held the post of divisional surgeon to one of the divisions of the Metropolitan Police, and there encountered a host of interesting personalities of all sorts.

Many of his stories cover the war period and travel cruises. They are related in a pleasant and readable form and should prove a useful storehouse for storytellers in all walks of life. A fund of humour is especially valuable to medical practitioners in difficult times like the present, and a perusal of this booklet will prove both interesting and instructive.

G. MACFEAT.

VENEREAL DISEASES

Venereal Diseases described for Nurses. By R. C. L. Batchelor, M.A., M.B., Ch.B., D.P.H., F.R.C.S.Ed., M.R.C.P.Ed., and Marjorie Murrell, M.B., B.S., D.P.H., F.R.C.S.Ed., M.R.C.S. (Pp. 218; 43 figures. 12s. 6d.) Edinburgh: E. and S. Livingstone. 1951.

This little book, written for both male and female nurses, contains in some 200 pages all that, or even more than, they need know about venereal diseases and patients suffering from them. It contains an adequate description of most of the venereal and allied diseases which bring patients to V.D. clinics, together with their symptomatology and treatment. The descriptions are clear and most of the illustrations first-class, though the figures on pp. 12 and 152 contain no references to the numbers given in the captions. There is an excellent section on ethical and sociological considerations.

A few criticisms both constructive and destructive may be allowed. The language is perhaps rather too technical and more suitable for a medical student than a nurse, who might be hard put to it to explain the meaning of ophthalmoplegia, for example. The impression is given that chancres are almost always "hard," that "salvarsan" commonly causes death, that a provocative injection of neoarsphenamine is of considerable value, and that a Herxheimer reaction in syphilis may be avoided by starting treatment with small doses of penicillin. A description of the procedure for lumbar puncture would be useful. Complementary for complimentary (p. 55), and specula for speculae (p. 164), will presumably be included in the next edition, which will soon be needed, for this excellent book should have a wide circulation.

T. E. OSMOND.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY FEBRUARY 16 1952

KING GEORGE VI

The country and the Commonwealth mourn the passing of a beloved and kindly King who by his steadfast bearing, devotion to duty, and manly example made all his peoples truly members one of another, bound with hoops of steel in the adversity of war and knit together in a firm resolve to build a new world in the peace that yet hovers on the horizon. He gave us the strength that comes from the unity of a Monarch with his people. When Britain stood alone the King and his family stood there in the centre of our life, enduring in full measure the ordeal of the battle that raged over the cities and ports of a besieged country. If the constitutional sovereign of a free people has become in much of his significance a symbol, King George VI was a symbol not of the pomp and circumstance of palaces but of a devoted father of a family who in his unaffected simplicity came close to the heart of the common man, and in this became so much the more a King.

The British Medical Association mourns the passing of its beloved patron, and the thoughts of its members move in deep sympathy with the widowed Queen and with Queen Mary. The ties between the medical profession and the throne are in some ways closer than those of other sections of the community. Doctors assist at the birth of the Prince or Princess destined to take up the heavy burden of sovereignty. They give their counsel in health and their skill and care in sickness. Chosen because of their character, knowledge, and wisdom, they assume an overwhelming responsibility when called to the sick-bed of a King or a Queen. King George VI was sorely tried by illness in his too brief life. The courage and persistence with which he triumphed over a distressing disability of communication he displayed in the grave illnesses of his last years. As a naval cadet at Osborne he had a severe attack of pneumonia. In the early weeks of the 1914–18 war he was operated on for appendicitis; but he saw active service in the Battle of Jutland. Then a period of serious ill-health ended in an operation for duodenal ulcer at the end of 1917. It was in November, 1948, that his medical advisers issued a bulletin stating that "the King is suffering from an obstruction to the circulation through the arteries of the leg, which has only recently become acute; the defective blood supply to the right foot causes anxiety." In commenting on this the *British Medical Journal* said: "The medical profession will join with the rest of the community in heartfelt sympathy with the King in his present disablement—a sympathy heightened by their knowledge of the pathology of arterial disease." It was indeed highly probable that the local condition of the leg was symptomatic of a more widespread involvement of the arterial system, and his medical advisers must have been gravely concerned about the condition of the cerebral and coronary arteries, a concern which they naturally had to keep within their own counsel. Further bulletins were issued, and in March, 1949, the country learnt that lumbar sympathectomy had been performed with a view to improving the supply of blood to the right foot.

In a review at the time of the value of sympathectomy in the treatment of organic arterial disease it was stated in these columns: "The majority of arteriosclerotic subjects are old, their expectation of life is limited, and the risks of operation are greater. Even so, lumbar ganglionectomy may be of distinct value in some of these cases. The operation is best reserved for patients under 60. . . ." The King's recovery from the operation was uneventful, and happily he gained relief from his distress and the circulation in the right foot improved. But the state of the King's cardiovascular system must have continued to be a source of grave anxiety to his medical attendants. His sudden but peaceful death from coronary thrombosis ten days ago, on February 6, was the sad and now all-too-familiar outcome of the condition diagnosed in 1948 and bearing no relation—it seems unnecessary to add in a medical journal—to the disease of the lung for which resection was carried out in September of last year. About three months after signs of inflammation in the lung structural changes appeared of such a nature as to compel the King's doctors to advise resection, a serious operation from which the King made a magnificent recovery. The nature of the lesion in the lung has not been officially declared, but the following statement in the *Manchester Guardian* of February 7 reflects informed opinion on it: "Although a name was never officially given to the illness which necessitated the King's sudden operation on September 23, most doctors thought that the 'structural changes' first announced on September 18 were those of cancer of the lung."

His late Majesty, as an account on page 386 shows, followed his father's example in the interest he took

in the world of medicine. He was closely identified with the British Empire Cancer Campaign, and it was only a fortnight before his accession that he had presided in the House of Lords over the annual meeting of that body. In 1933 he opened the International Paediatrics Congress, saying, "Take care of the young, and the country will take care of itself." It was indeed with the young that he seemed to be at his happiest, and it was in 1921 that he arranged for the first of his boys' camps, made up of 200 public school boys and 200 boys from working-class homes. Two years before this he had become President of the Boys' Welfare Association, under whose aegis the camps were run. Here was a direct contribution to social welfare and to what was known later as "positive health." As Duke of York he lived in the camp, took part in the sports and the games, and joined with zest in the camp-fire singsongs. His interest in the health and welfare of the young was further shown by his presidency of the Barnardo's Homes, the Boys' Welfare Association, the National Playing Fields' Association, and the National Safety First Campaign. After the death of his father he was made chairman of the Advisory Council set up to help in administration of King George's Jubilee Trust, which by endowments and grants aided young people in their games and sports. Another sign of his attunement to the age in which he was living was his concern with industrial welfare, manifested when he accepted the presidency of the Industrial Welfare Society. It was sad that one who played such an active part in promoting health and welfare should have suffered so much from illness, and it was with personal knowledge of what he owed to medical research that at the opening in 1950 of the National Institute for Medical Research at Mill Hill he said:

"The work of the Institute exemplifies that spirit which inspires the State and science to work together for the health and happiness of mankind. . . . Many families here at home and, indeed, throughout the world have reason to be grateful for the benefits which have been brought about by medical research."

Medical men and women, knowing the nature of the King's recent illnesses and operations, must often have feared that his life might end after protracted suffering and anguish of mind and body. The great shock and grief at his sudden death must in the nature of things be tempered with the knowledge of what he may have been spared. During his life King George VI witnessed the flowering of a new epoch in medicine, with its especial triumphs over so many dire infections. His daughter, Queen Elizabeth the Second, will, we may hope and pray and expect, witness the conquest of the diseases that afflicted her father in the last years of his reign.

QUEEN ELIZABETH II

In the name of the British Medical Association and of the medical profession of this country we join with all loyal subjects in offering homage to the new sovereign. Like her late father, Queen Elizabeth II is the centre of a happy family life, and with her husband has earned the deep affection of the peoples over whom she reigns. She has already graced many a medical occasion, and is an Honorary Fellow of the Royal College of Obstetricians and Gynaecologists and of the Royal College of Surgeons of England. When, as Princess Elizabeth, she was admitted Honorary F.R.C.S. on December 5 last year she referred with feeling to the astonishing development of surgery since the College had received its first Royal Charter. As contrasted with the destructive uses man had made of scientific knowledge, "surgery at least," Her Royal Highness observed,[1] "was one field in which man's wisdom and energies had been devoted consistently to human good."

Like her great namesake, Queen Elizabeth comes to the throne at the young age of 25. Upon her youthful shoulders there now falls the heavy burden of public duties and State occasions and all the detailed work that is undertaken by a constitutional sovereign. Yet the Queen has, perhaps, a higher duty, and that is to her children, to her family. The young Queen is also the young mother, and it is devoutly to be hoped that those who give her "good advice and counsel"—to use the words of the other Queen Elizabeth on her accession in 1558—will see that the stresses and strains of Queenship are not borne at the expense of the fulfilment of motherhood.

THE PLACE FOR VOLUNTARY WORK

King Edward's Hospital Fund for London is an independent charity which has contributed many valuable ideas to the National Health Service. Perhaps the Emergency Bed Service is the best known of its creations, but it has been extremely active in setting up schools to train hospital administrators and caterers, in conducting research into many aspects of hospital organization and life, in investigating hospital costing on behalf of the Ministry of Health; in fact, in acting as the higher cerebral centres of the hospital service. Through its intelligence, independence, and great wealth it has been able to soften the

[1] *British Medical Journal*, 1951, 2, 1517.

rigidity of State bureacracy and to guide the managers of the Health Service into useful creative action.

The Civil Service was originally a purely managerial body controlling enterprises already in being, and recent legislation has given it work it was never intended to be able to do. The 1946 Act made it responsible for creating a new national medical service, and the knowledge and wisdom of King Edward's Fund and the Nuffield Provincial Hospitals Trust was brought in to give practical help in its planning. Civil Servants were aided to make these plans realities by the many public-spirited people who gave their time to the new boards and management committees as they had formerly to the voluntary hospitals. It is often forgotten that the Health Service has grown from, and is still shaped by, voluntary work and the efforts of charity.

To many social reformers charity has a suspicious and unpleasant sound. The Welfare State, it was hoped, would replace the inadequate, haphazard, and what was sometimes looked on as the patronage of the poor by the rich by granting the right to all citizens equally to obtain aid from an impersonal State. And it would do away with sweated labour and working without pay and ensure full employment at a reasonable wage. This has been the belief of many ordinary people in the past four years. They have paid high weekly insurance contributions and high taxes and imagined they were paying for a full health service in complete running order. Charity was outmoded, volunteers no longer needed.

And now King Edward's Hospital Fund for London, jointly with the National Council of Social Service, has put us once again in its debt[1] by analysing the position of the unpaid worker in the hospital service. It is the first survey of its kind, and only an introduction to its subject. Many criticisms can be brought against it: that it contains too many personal opinions and not enough hard fact, that it wanders into irrelevant discussion of the administration of the Health Service, that it is not cogently written and will not make the public impression that the subject deserves. But it does bring forward two matters of the first importance. One is that since 1947 the need for voluntary service has increased, not vanished, and the supply of volunteers and money does not yet meet this need. And the other is an elucidation of the significance of voluntary work.

Man is a social animal. He has the instinct to live a communal life, which means not merely to exist in an aggregation of individuals but something more—to work with and aid his fellows. This fact tends to drop out of sight in the gulf between discussions of individual rights and national demands. Men are more than units of personnel or production; they are not naturally occurring electronic brains in suitable mobile housing. They are born with the need to react emotionally on one another, and the giving of service is one outlet for this need. It is an outlet which may be channelled and directed but must not be stopped up, because to do so is to cut men off from one another and begin the disintegration of the community. This is a truism of mental health, and it is ironical that the daily life of peace should fail to offer the outlet of war. Where now is the spirit of Dunkirk? None of the problems such as housing and tuberculosis have been attacked with the vigour which went into military victory, and this is partly because people have not understood their own local responsibility in the peace effort and the opportunities for service.

Voluntary Service and the State indicates many useful parts the volunteer can play, both in and out of hospital. Ward orderlies, visitors, and interpreters, the trolley-shop which sells things to patients, the library service (how many patients realize that the books are mainly gifts and the librarians volunteers?), out-patient receptionists, canteen workers, clerical assistants to the blood transfusion services . . . the list of ordinary hospital jobs is enormous, and the work, particularly in chronic sick and mental hospitals, of great importance. But the opportunities outside also are great. In some areas district nurses, health visitors, the hospital car service, aftercare, and home helps are organized by voluntary societies. Sitters-up who will stay with a patient all night, home physiotherapists, aid to patients on discharge from hospital, provision of special food and appliances—the services vary from area to area according to local needs and initiative, and they want both trained and untrained people to give a few hours a week of their time.

But the first need is publicity. It would be good for patients to be told how much is being done for them by voluntary effort. They will not then take it for granted, and some of them will later wish to offer their services by way of thanks. There ought to be more articles in local newspapers on the kind of work being done and the need for more volunteers. Hospital committees can explore the possibilities of direct contact with local groups such as the employees of large firms to see whether friendly relations and help can be stimulated. The hospital could be a centre of local community life and not just a unit of the national medical service, and voluntary work at all levels has an important part to play.

1 *Voluntary Service and the State*: A study of the needs of the Hospital Service. London. 1952. Price 2s. 6d.

E.S.R. IN ANAEMIA

When blood is diluted with its own plasma, the erythrocyte sedimentation rate (E.S.R.) is increased, a fact first demonstrated by Fåhraeus[1] and repeatedly confirmed. This accelerating effect of dilution, and the frequent association of anaemia and an increased E.S.R., led laboratory workers to conclude that anaemia *per se* increased the E.S.R., quite apart from other pathological conditions, and they then sought means of correcting for the anaemia. Of the numerous methods of correction evolved, those of Wintrobe and Landsberg[2] and of Hynes and Whitby,[3] both only applicable to the Wintrobe E.S.R., became generally accepted.

These corrections have not been popular with clinicians, who tend to prefer the Westergren E.S.R., with its normal range smaller and its abnormal range much greater than the Wintrobe values. Furthermore, the Westergren E.S.R. appears to correlate better with the clinical assessment of patients (Sinton,[4] Gilmour and Sykes,[5] Shackle[6]). However, the correction theory has limited the value of the Westergren E.S.R. in anaemic patients, since there is no accepted method of correcting it for anaemia, and it has thus become customary with anaemic patients either not to estimate the E.S.R. on the grounds that it will necessarily be raised, or to disregard an abnormal result.

Doubts about the validity of the various methods of correction have been repeatedly expressed. Recently Terry[7] gave reasons for regarding them not only as fallacious but also as unnecessary. He considered that it was irrational to apply the same method to the many different varieties of anaemia, and that, since the correction charts were based on dilutions of normal blood, their significance for specimens of anaemic blood was obscure. He argued that there was no proof that anaemia increased the E.S.R. and submitted clinical and experimental evidence showing that simple hypochromic anaemia is frequently associated with a normal E.S.R. He concluded that anaemia *per se* does not increase the E.S.R., and suggested that the small abnormal cells of hypochromic anaemia resist rouleaux formation or that its plasma is deficient in rouleaux-stimulating properties.

Drs. J. C. F. Poole and G. A. C. Summers in a series of convincing experiments reported elsewhere in this issue have now demonstrated that in iron-deficiency anaemia this increased stability of red cells in suspension is a property not of the plasma but of the cells, possibly the result of anisocytosis. They also found that in symptomatic anaemia the plasma exerted a strong accelerating influence, that in post-haemorrhagic anaemia both cells and plasma behave more like normal blood, and that in macrocytic anaemia the cells behave less predictably.

It seems clear from these findings that an abnormal E.S.R. in the presence of iron-deficiency anaemia is significant, and indicates either that the anaemia is not due to uncomplicated blood loss (of which menstruation, childbirth, and haemorrhoids are the commonest causes) or that some complicating illness such as phthisis is present; in either case further investigation of the patient is necessary. In symptomatic anaemia the problem seems academic, since the condition of which the anaemia is symptomatic is also likely to be the cause of the abnormal E.S.R. Thus the lengthy and little-disputed reign of the correctionists is now being challenged, and clinical interpretation is at last replacing laboratory deduction.

1 *Acta med. scand.*, 1921, **55**, 1.
2 *Amer. J. med. Sci.*, 1935, **189**, 102.
3 *Lancet*, 1938, **2**, 249.
4 *British Medical Journal*, 1948, **1**, 391.
5 Ibid., 1951, **2**, 1496.
6 Ibid., 1952, **1**, 277.
7 Ibid., 1950, **2**, 1296.

THE HAIR

True hair is peculiar to mammals, and its primary purpose seems to be the prevention of heat-loss in warm-blooded animals. In man hair is almost vestigial, but it remains of some importance and much interest. The form, abundance, colour, and length of hair are used as anthropological criteria. In social affairs much time and labour and money are expended upon its adornment, and the chemistry and physics of hair-dyeing, setting, and waving alone have added important chapters to scientific progress and to biomolecular studies. The effects of radiation on hair started the development of modern radiation therapy and are used experimentally in assessing the surface changes caused by radiation from new sources. Similar effects constitute an important indication of the degree of injury sustained in atomic warfare.

Hair has played an important part in the elucidation of the problem of pigment formation. Tyrosinase, which is essential in the process of pigmentation, contains copper. Rabbits fed on a diet from which copper was excluded showed a greying of the previously black hairs, together with a general loss of hair.[1] Genetic, endocrine, and ageing factors are responsible for baldness and are interdependent. It is said that baldness is less common and is seen later in the Chinese than in the Caucasian.

Much of the more recent knowledge on this subject was brought together in a symposium on the growth, replacement, and structure of hair organized by the Section of Biology of the New York Academy of Sciences.[2] Study of the hair coats of animals, especially sheep, has given a better understanding of observations upon the growth of hair in man and of related genetic problems. Histological studies emphasize the outward motion of cells in the epidermis and appendages from the innermost cells of the Malpighian layer. The tonofibrils within the epidermal cells, regarded as the precursors of keratin, lie perpendicular to the skin surface in the epidermis, but they are parallel to the long axis of the hair. A soft keratinization is characteristic of the epidermis and is indicated by a granular and a glassy layer. Chemically such keratin has a low sulphur content and is unstable, as evidenced by continuous desquamation. Hard keratin found in the appendages has a

1 Burn, J. H., *Brit. J. Derm. Syph.*, 1951, **63**, 431.
2 *Ann. N. Y. Acad. Sci.*, 1951, **53**, 461–752.

high sulphur content, has strength, and is chemically inert, a fact explained by the oxidation of cysteine to cystine, providing cross linkages between the polypeptide chains making up the tonofibrils and welding them into a closely knit mass.

Proliferative activity in the hair follicles in animals occurs periodically, passes in a wave from the ventral to the dorsal surface of the body, and is followed by a period of rest. It is interesting that in some animals the period of lactation, when the cutaneous circulation has to supply extensive mammary tissues, is associated with a cessation of hair growth.

The physician has always made use of the reflections in the skin of the health and tone of his patient and of the presence or absence of general disease. These features are often amplified in the appendages and particularly in the hair. Here may be seen indications of the race and sex and age of a subject and perhaps something of his strength and temperament. Major disturbances, as of nutrition or endocrine function, of emotional stress or infective disease, are readily detected. Increasing knowledge of the nature of hair growth and structure is likely further to help the general physician in his assessment of a patient and the dermatologist in his understanding of skin diseases.

MERCURY FOR CHILDREN?

Are mercurial preparations destined to drop out of the pharmacopoeia in the near future? There is evidence in the paediatric literature of most continents that mercury is no longer being prescribed with the old-time characteristic assurance. The need for taking stock became apparent when Warkany and Hubbard[1 2] published their finding of appreciable amounts of mercury in the urine of 30 out of a total of 41 children with pink disease. In 1947 Fanconi and his co-workers[3] recorded observations on 56 hypersensitive children who showed untoward reactions to mercury. Of the 56 cases 39 were regarded as examples of "calomel disease." In this week's issue of the *British Medical Journal* Dr. M. L. Thomson and two other members of his team have collected the clinico-pathological facts relating to five children who were all between the ages of 11 months and 3½ years when they were in hospital, each of whom was known to be taking mercury by mouth at regular intervals for periods extending over months, and all of whom presented a clinical picture of nephrosis.

It may be that we are on the fringe of a better understanding of the implications of mercury treatment. We know that inhaled mercury fumes, ingested mercury pills, and napkins soaked in biniodide solution may all give rise quite easily to symptoms of poisoning. Exceptionally, toxic side-effects can be traced over a period to the time when an amalgam dental fitting was first inserted. A further complicating feature is that an individual who shows signs of sensitivity to one mercurial compound cannot be relied upon to react to all such compounds. It is important that we should not be driven from our pharmacopoeia through fear. The immediate need is not to jettison useful drugs but rather periodically to review therapy in use and be sure that the value justifies the risk. Teething-powders, worm powders, and grey powders have become too convenient a medicament. The object should be to do away with as many powders as possible and at all costs to discourage any tendency on the part of the parents or the family to regard daily medication as essential to health in childhood. The greatest risk to which a child may be exposed is subjugation to a routine of this kind, with no pauses to review the situation.

1 *Lancet*, 1948, **1**, 829.
2 *Amer. J. Dis. Child.*, 1951, **81**, 335.
3 *Helvet. paediat. Acta*, 1948, **3**, 264.

FUNNEL CHEST

Although the deformity of funnel chest, or pectus recurvatum, was described in the sixteenth century, it is only in the last few years that treatment has been undertaken, or indeed been considered possible. The lesion consists of a funnel-shaped depression of the lower sternum, at the apex of which is the xiphoid process. It is usually symmetrical, but not always so. The costal cartilages are drawn backwards with the sternum, and there is sometimes also a transverse groove across the lower chest wall. Although this groove resembles Harrison's sulcus of rickets, funnel chest has nothing to do with this disease, nor is it the result of respiratory obstruction. The deformity is due to a congenital abnormality of the diaphragm: this was first shown by Brown[1] and has recently been elaborated by Brodkin.[2] If the anterior portion of the diaphragm, developed from the septum transversum, is deficient, the central tendon is short and pulls on the xiphisternum. If the lateral portions are also short the costal arch will be grooved.

A mild degree of funnel chest is common and symptomless, but more severe degrees lead to secondary effects. The patient is round-shouldered, with sloping ribs, and underweight. The lungs are compressed, and breathing is inefficient. Respiratory infections are common—perhaps because coughing is ineffectual. The most important symptom is dyspnoea on exertion; this is probably cardiac rather than pulmonary in origin and due to rotation and compression of the heart. A systolic murmur is sometimes heard. The pulse rate and blood pressure are unstable, and an electrocardiogram may show minor abnormalities such as axis deviation or inverted T waves. The visible deformity may result in emotional disturbance, and asymmetrical breast development at puberty increases the disfigurement in girls. Although a neurosis may be engendered, cardiac symptoms usually have an organic basis.

Methods of operative treatment, based on the aetiology described above, have been developed in America. In infants it is sufficient to detach the xiphoid from the sternum and free it from its diaphragmatic attachments. A more elaborate procedure is necessary in older children, when the sternum and costal cartilages

1 *J. thorac. Surg.*, 1939, **9**, 164.
2 *Dis. Chest*, 1951, **19**, 288.
3 *J. thorac. Surg.*, 1950, **18**, 507.

have become fixed. Lester[3] prefers to operate before the age of 5, but good results are obtained in older patients, even adults, in whom symptoms are relieved, though the deformity cannot be entirely corrected. The sternal costal cartilages below the second are resected subperichondrally; the xiphoid is detached and the diaphragmatic attachments released. A transverse osteotomy of the sternum is done by a wedge resection of the outer table about the third segment. The sternum can then be elevated, obliterating the depression. It must be held in the new position either by wires attached to an external ladder splint, which maintains a stable chest wall until union has taken place, or else by inserting under it a free graft of cartilage or rib.[2] Several series of cases have been reported, with no deaths and very few complications. The majority of patients with this deformity have it in a mild degree and do not require treatment. Very few operations have been done in this country, but in the presence of a large depression surgery for the relief of physical or sometimes even mental symptoms should be considered.

GREAT ORMOND STREET

On February 14, 1852, St. Valentine's Day, the children's hospital which is now known all over the world as "Great Ormond Street" first opened its doors, and three days later the first patient was admitted. The foundation of "The London Hospital for Sick Children" and its later development are described in an article on another page. Readers of this will see that Dr. Charles West, the moving spirit behind the birth of the hospital, was determined from the start that it should be an educational centre not only for doctors and nurses but for the enlightenment of mothers. Within a few years of the hospital's opening a "model infant nursery" was set up, and this was an appropriate beginning to the work of prevention which has always been well in the foreground at Great Ormond Street, and which the Institute of Child Health continues to foster.

During the hundred years of its existence the hospital has had on its staff many of the giants of nineteenth- and twentieth-century medicine—among them Gee, Cheadle, Barlow, Still, Garrod, and Hutchison. The last-named, whose 80th birthday was celebrated four months ago, has written a little nostalgically of "the 'beautiful' examples of rickets and infantile scurvy, or the cases of acute rheumatism with enormous nodules,"[1] which are now no longer seen at Great Ormond Street, but it has been owing to the work of men of his stamp that, as he himself says, "disease has become less 'picturesque' with each generation"—a change for which to-day's patients can be devoutly thankful.

One other side of the work at Great Ormond Street has been of outstanding importance. Before Florence Nightingale set on foot the reform of the Army nursing service during the Crimean War, which began in 1853, the status of nurses was remarkably low, with the result that few, if any, women of education and feeling took up nursing as a career. Miss Nightingale's work eventually brought about a revolution in public opinion, with consequent great changes in the method of recruitment of nurses. But it was a gradual revolution with many setbacks. While the struggle to improve nursing in the large general hospitals was going on there was being established at Great Ormond Street a tradition of children's nursing which has not only been of inestimable benefit to sick children everywhere but which was of the greatest help to Miss Nightingale's main cause—the importance and dignity of nursing. The hospital to-day carries on that tradition. Only a few weeks ago we published a paper from Professor A. Moncrieff and Sister A. H. Walton[2] describing an innovation in the nursing of sick children at Great Ormond Street which might well be adopted in children's wards throughout the country.

[1] *Fifty Years of Medicine*, 1951, London. Published by the British Medical Association. Price 15s.
[2] *British Medical Journal*, 1952, 1, 43.

SCIENTIFIC EXHIBITION AT THE ANNUAL MEETING

A welcome innovation at the Joint Annual Meeting this year in Dublin will be a scientific exhibition staged by members of the British and Irish Medical Associations. Demonstration booths of the familiar exhibition pattern are to be set up in a large hall, and they will contain displays which, in the words of the relevant resolution of Council, "should consist of refresher demonstrations on particular subjects of current medical interest, presented at specified times . . . and illustrated by pathological specimens and other appropriate exhibits." The exhibitors will be expected to be on hand at certain times of day to talk about their demonstrations to their colleagues and to answer questions. The exhibition will be open only to members of the profession.

This excellent idea owes much to Mr. Lawrence Abel, who recently brought back from the U.S.A. particulars of the similar exhibition held at the annual meetings of the American Medical Association. Mr. Abel has also visited Dublin to arrange practical details with officers of the Irish Medical Association. The success of the exhibition now rests with the members of the two Associations, who are asked to come forward with exhibits. It is greatly to be hoped that there will be a good response to this invitation. A show of this sort, providing opportunities for informal discussion with workers in different fields of medicine, should certainly be a most attractive addition to the programme of the Annual Meeting. Time is short and floor space limited. Prospective exhibitors are therefore urged to apply for space for their exhibits without delay. Full details are given at page 379.

The half-yearly indexes to Volume II of the *Journal* and the *Supplement* for 1951 are now being sent to members who receive them regularly and to subscribers. Members who have not previously asked for the indexes to be sent regularly to them can obtain copies, post free, on application to the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1; those wishing to receive the indexes regularly as published should mention this.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

FREQUENCY OF MICTURITION

BY

H. P. WINSBURY-WHITE, F.R.C.S.

Senior Surgeon, St. Peter's and St. Paul's Hospitals; Lecturer, Institutes of Urology and Child Health, University of London

BLADDER-NECK IRRITATION WITH LITTLE OR NO OBSTRUCTION

The commonest type is the patient who has chronic frequency of micturition but in whom repeated examinations of the urine have failed to show any abnormality. This clinical entity is found at all ages and in both sexes. The frequency is usually more marked when the patient moves about than when sitting or lying; it is aggravated in bouts for no apparent cause; and it is associated with urgency. In children especially, the urgency sometimes results in diurnal incontinence and it may also be associated with enuresis; this last manifestation is sometimes carried on into adult life. Cerebral impulses, such as those due to the sound of running water or emotional disturbances, are more potent in initiating micturition in these patients than in normal individuals, and in some patients with enuresis profound sleep probably acts by lessening cortical control. There is as a rule no residual urine. In adults the bladder capacity rarely reaches above 4 to 6 oz. (114 to 170 ml.). The patients tend towards occasional attacks of cystitis.

In long-standing cases there are sexual disorders of various kinds, the commonest of which is impotence. Lumbar fibrositis (lumbago), sacro-iliac disease, sciatica, neuritis, and arthritic changes, especially in the digits and lumbar spine, may also occur; headaches and nausea, bouts of *Bact. coli* urinary infection, and some residual urine in the bladder are common. Because of the development of fibrosis at the bladder neck there are generally obstructive changes here.

In the early stages the frequency is commonly regarded as a form of nervous-system disorder, because the urine is sterile; later, when coliform bacilli begin to appear, the case is diagnosed as one of *Bact. coli* urinary infection; if one of the rheumatic manifestations dominates the clinical picture, the diagnosis is according to this.

Obviously the initial reason why this group of cases is not understood is that the examination of the urine throws no light on the case. It is only as a result of routine cystoscopy and more particularly of urethroscopy that it becomes clear that chronic inflammatory processes can exist in the posterior urethra without either evidence of their presence in the urine or a urethral discharge.

Pathology

The routine endoscopy of all cases of disturbances of micturition allows one to visualize the pathogenesis of these chronic cases, and since 1936 it has been my practice to carry out urethroscopy and cystoscopy in all children sent to me for investigation.

Boys.—Small granulomata or occasionally actual polypi are found in the prostatic sinuses or on the verumontanum; a smooth rounded projection (hillock) on the margin of the internal urinary meatus or on a lateral lobe of the prostate is also not uncommon. The granulomata and polypi apparently arise at the orifices of normal or adventitious openings in the posterior urethra. Some hillocks are possibly associated with the lymphoid follicles found in the posterior urethra of children. In certain cases the verumontanum appears to be atrophied. The ceiling of the membranous urethra is at times conspicuously the seat of chronic inflammation, the gland orifices being dilated and the surrounding mucosa shaggy or covered with thickened epithelium. Congenital urethral stricture occurs most commonly in the mid-penile urethra. The narrowing is identified by noting the "gripping" in passing sounds; there is no localized area of scar tissue such as one sees in acquired strictures in adults, but a funnel-shaped narrowing. Sometimes there is a persistent small amount of residual urine in the bladder. The importance of chronic meatitis, seen from time to time in circumcised children, should not be overlooked. Sometimes there is an ulcer which may be very chronic and result in contraction of the meatus, inflammation of the urethra, and attacks of cystitis. After infancy a prepuce which is adherent to the glans invariably covers smegma; untreated, the condition persists indefinitely, and ultimately causes urethritis and cystitis.

Girls.—Urethral granulomata are not seen so often in girls as in boys, but they are quite common in women who have suffered from frequency of micturition or enuresis since childhood. In girls hillocks, generalized urethral narrowing, and residual urine in the bladder are seen from time to time. Some consider that it is not abnormal for children to be unable to empty the bladder completely, but the fact remains that such children are usually subject to disturbances of micturition. A simple chronic inflammation of the vulva is sometimes seen, which is generally associated with urethritis but not with vaginitis. Exceptionally, vaginoscopy will show a granuloma of the cervix. Many cases of enuresis fit into one or other of the above categories.

Women.—Disturbances of micturition are so usual and so chronic in women that they have been regarded as an almost inevitable part of adult life. In addition, the female urethra has commonly been considered a small and inoffensive part of the urinary tract. For more than 20 years it has been my practice to make a urethroscopic examination in all my women patients with disturbances of micturition, and this routine has made it obvious that the cause of the symptoms often lies in the urethra. In some there is a continuation of the pathological changes which are seen in childhood; in others the lesions have been acquired later. Before the urethroscope is introduced a size 24 Charrière metal sound is gently passed, when it can be noted whether there is any gripping, tenderness, or bleeding. On urethroscopy the commonest pathological finding is an inflammatory process involving the posterior urethra and the front of the trigone (urethro-trigonitis). In the more chronic cases inflammatory polypi are seen projecting around the internal urinary meatus; these are sometimes found only in a rudimentary form (hillocks), or there may be a rigidity of the internal urinary meatus (fibrosis).

Men.—When disturbance of micturition has been present since childhood, granulomata and polypi are generally conspicuous, patches of leucoplakia may be found anywhere in the posterior urethra, and hillocks are to be noted projecting from the lateral lobes of the prostate or at the

internal meatus. The meatus itself is often raised well above the floor of the prostatic urethra. Sometimes a generalized urethral narrowing is obvious on attempting to pass instruments. In old-standing cases rectal examination may show thickening in the regions of the prostate and seminal vesicles, but in early cases very often no change can be felt.

Bacteriology and Effect on Upper Urinary Tract

So far no specific organism has been identified to explain any of the inflammatory processes mentioned. These infections in most cases seem to establish themselves insidiously. This is in contrast to the cases in which frequency develops acutely with a urethral discharge and perhaps with terminal haematuria when a venereal origin is highly probable, although a scanty and intermittent gleet is common enough in adults in whom there is no such association.

Intravenous urograms often disclose persistent areas of poor renal function, indicating localized sclerosis; and moderate degrees of pelvic or calycine dilatation are common enough. These pathological changes manifest themselves clinically in attacks of pain or pyelitis.

Treatment in Children

In dealing with patients, whether children or adults, who show only the pathological changes described above, it will be found that, although antibiotics will sometimes cause the symptoms to lessen or to disappear for a short period, their recurrence is the rule.

Meatitis.—This requires a simple meatotomy. The cut should be made parallel with and just to one side of the fraenum, reaching almost to the coronal sulcus. No sutures are required, but the raw surfaces must be separated each day for five days by inserting the tip of a sound between them.

Granulomata or Polypi in the Posterior Urethra.—Dilatation of the whole urethra with metal sounds, on one or two occasions at intervals of not less than two months, is the best treatment. Very exceptionally fulguration of the polypi is required.

Small Amounts of Residual Urine.—When there is 2 oz. (57 ml.) or less, urethral dilatation as above should be carried out, except that this treatment may have to be continued longer.

Localized and Generalized Urethral Contraction.—The assessment of these cases will depend upon knowing what the urethral calibre, according to age, should be. In a child of 8 a size 16 Charrière sound should lie comfortably in the urethra without gripping. Ages and sizes then are as follows: add one size for each extra year; take away one size for each year less than 8. This gives the whole scale for children. Treatment should be by dilatation.

Adherent Prepuce.—The prepuce must be freed by gauze dissection, and the parts subsequently kept separate by the daily application of a liquid paraffin dressing and retraction of the foreskin over a period of at least five days.

Simple Vulvitis.—The daily application of penicillin or a sulphonamide ointment should be carried out for two weeks, and repeated after a week's rest if necessary.

Acute Cystitis.—Copious fluids, alkalis, and antibiotics are used during the acute stages. Later any local cause must be sought.

Treatment in Women

It is a very interesting fact that small hillocks and flimsy polypi will disappear from a woman's urethra as a result of a single instrumentation. This change is accompanied by an improvement in symptoms. Bulky hillocks and fleshy polypi, however, must be treated by coagulation through an operating urethroscope in the in-patient department.

Out-patient treatment is adequate in many of the cases. This consists of the original cystoscopy and urethroscopy, and then urethral dilatation with straight metal sounds at steadily increasing intervals between the treatments. The intervals are conveniently arranged as follows in weeks: 3, 4, 6, 8, 13, 26, 39, 52. Wyndham Powell urethral dilators should be used. Three phases follow a urethral dilatation: reaction, improvement, and relapse. Any one of these phases may be short or prolonged. Unfavourable symptoms will be encouraged by unskilful treatment, due commonly to too frequent or excessive dilatation. It often takes the urethra two weeks to settle down after a properly conducted instrumentation, and that is why three weeks are allowed to elapse in the first instance.

Treatment in Men

The same method of treatment should be carried out with men, except that curved metal sounds are used. In treating men, however, it is a matter of experience that if all are investigated as out-patients a certain proportion will suffer complications of the instrumentation. This is because damage is sometimes done to an already diseased prostate. My rule therefore is to admit to hospital all men over 50 who require instrumental investigation. Post-prostatectomy and bladder-growth cases accustomed to regular inspection are exceptions to this rule. All the other investigations, however, are carried out in the out-patient department. Even with in-patients the same danger threatens, but this may largely be avoided by carrying out any necessary endoscopic examinations immediately before operation. For instance, when prostatectomy is indicated the gland is enucleated within 20 minutes or so of the cystoscopy. Those cases of bladder-neck irritation which are found not to require operation—that is, when the residual urine is not more than 4 oz. (114 ml.) and the gland is not adenomatous—are referred back to the out-patient department. They can usually be successfully treated by intermittent urethral dilatation.

BLADDER-NECK IRRITATION WITH OBSTRUCTION

Children

The finding of large amounts of residual urine in very young children is not uncommon in children's hospitals. In deciding treatment the first need is to determine whether or not the dilatation is due to a mechanical obstruction. This question should be approached by studying the bladder neck in cystograms. As the opaque medium in the bladder will take longer than usual to throw a shadow because the bladder is dilated by the residual urine, the exposures should not as a rule be started until an hour has passed; they can then be repeated at about hourly intervals until suitable pictures are obtained. It can then be seen whether the posterior urethra as well as the bladder is dilated; should this be the case, it may be assumed that posterior urethral valves are present. These are usually impossible to see through a urethroscope.

The absence of posterior urethral dilatation leaves the choice between neuromuscular derangement of the bladder wall and stenosis of the internal urinary meatus—and it is often difficult to decide which is responsible. Opening the bladder and excising the internal meatus usually results in a reduction in the amount of residual urine, but if a large quantity was originally present it can be expected that a considerable amount will still remain after operation. Transplantation of the ureters into the bowel, sometimes after a preliminary period of bladder drainage, may be the best course to follow.

Women

In women mechanical obstruction of the bladder neck definitely occurs occasionally, generally because of fibrosis; sometimes there are quite large amounts of residual urine, even to the extent of causing visible bulging of the lower abdomen. No treatment less than a bladder-neck resection

will suffice for these cases. I prefer to do a suprapubic extirpation with the diathermy needle, keeping a finger in the vagina while the removal is being accomplished. This is a safeguard against perforating the anterior vaginal wall. Small amounts of residual urine—under 4 oz. (114 ml.)—will in due course be cured by intermittent urethral dilatation.

Men

There are several main types of prostatic change: adenomatous, fibrous, fibro-adenomatous, and malignant. Any of these may be associated with prostatic calculi or vesical diverticulum, which are found most commonly with the fibrous prostate and least commonly with a malignant prostate.

Adenomatous prostates are characterized by a frequency of micturition which is nocturnal rather than diurnal and, on rectal examination, by the "elastic" enlargement of the gland. Unlike these cases, the fibrous prostate declares itself well before the age of 50. The frequency of micturition is equally marked by day and night; on rectal palpation the prostate is small and firm or cannot be detected at all; and cystoscopy does not reveal the typical projecting mass of adenomatous tissue. The two types of tissue in a fibro-adenomatous prostate can be recognized either on rectal or on cystoscopic examination. Hardness, irregularity, and fixity are the characters of well-developed malignant disease of the prostate, but quite a proportion of these cases are discovered only on microscopy of enucleated or resected tissue. Irregular projecting masses on the front of the trigone, seen at cystoscopy, may give rise to the first suspicion. Prostatic calculi are usually discovered only on *x*-ray examination.

Treatment of Prostatic Obstruction

It is always best to enucleate an adenomatous gland. Whichever route is employed the following principles should be observed: on the basis of blood, urine, clinical and *x*-ray tests decide whether a one- or two-stage operation is to be done; avoid pre-operative urethral instrumentation, except as an immediate preliminary to operation; after the gland is out, excise a wedge of tissue from the posterior margin of the prostatic cavity, keeping a finger in the rectum while this is done; stop all bleeding and remove tags under direct vision. With this routine thrombotic complications are rare, and most cases are properly done in one stage. If attention has been paid to all these points a very narrow suprapubic drainage tube can be used and thus convalescence hastened. If, however, the bladder is subsequently drained entirely by urethral catheter then a well-trained team who thoroughly understand catheter management is essential for the convalescence. The ease with which clot due to secondary haemorrhage can be removed and the adequate control of a renal infection stress the advantage of suprapubic over urethral drainage. When all goes well, urethral catheter drainage undoubtedly shortens convalescence, but there are many cases in which the course is not straightforward and the convalescence is therefore prolonged. Sometimes this means that the urethral catheter has to be left in unduly, and this adds to the danger of subsequent urethral stricture. In all cases it is necessary to know what instrumental precautions to take as an extra safeguard against post-prostatectomy obstruction.

Transurethral resection operations for adenomatous prostates set special problems to the surgeon, particularly in the control of primary haemorrhage. Many surgeons, therefore, wisely reserve this form of treatment for fibrous prostates in cases in which residual urine is not excessive—personally, not above 8 oz. (227 ml.). When there are larger amounts there is a good deal of uncertainty about how often resection will have to be done. With the latter type of case I prefer to do a wide suprapubic resection of the fibrosed tissue with a diathermy needle.

A malignant prostate does very well without any operation at all, if the patient can empty the bladder. Many of these cases keep wonderfully well for years, simply on stilboestrol. If there is residual urine a transurethral resection may be necessary. Bad cases—that is, those with much residual urine—may require a suprapubic resection.

OTHER CAUSES OF FREQUENCY OF MICTURITION

Certain other important though less common causes of increased frequency of micturition require mention. All are easily identifiable.

Primary Upper Urinary Tract Disease.—As a cause of frequency upper urinary tract disease will be detected by evidence of it in the urine or on *x*-ray examination. It must not be forgotten, however, that renal changes are often secondary to lower urinary tract disorders.

Genito-urinary Tuberculosis.—Frequency with this condition will be accompanied either by characteristic bladder lesions visible on cystoscopy or by palpable changes in the genitals which are equally characteristic. Discovery of the tubercle bacillus in the urine is the final proof.

Diabetes.—Thirst, frequency, and polyuria in a child, and the discovery of sugar in the urine, are the essential features. In adults thirst may not be remarked upon.

Vesical Calculus.—In this part of the world to-day vesical calculus is nearly always secondary to a bladder-neck obstruction which dominates the clinical picture. In the stone areas of the Orient, however, where vesical calculus occurs commonly in young children as a deficiency disease, as it did in the last century in this country, there is in addition to the increased frequency the characteristically persistent terminal haematuria.

Foreign Body.—This is generally seen in a young patient, from whom the history of the insertion of an object is not always forthcoming. Radiography and cystoscopy may be necessary.

Urethral Stricture.—In addition to the frequency, difficulty in micturition and perhaps an intermittent urethral discharge are likely features. Obstruction in the anterior urethra to instrumentation is diagnostic.

New Growth of the Bladder.—When frequency is associated with a new growth haematuria is an outstanding feature; in such a case the growth is usually malignant. Cystoscopy at once directs the further procedures along the right lines.

Retention of Urine with Overflow.—This is mentioned mainly to stress the importance of placing the hand on the lower abdomen in the course of a urinary investigation.

Pelvic Tumours.—Pressure of tumours from outside the bladder tends to cause symptoms which are more marked in the erect posture. Bimanual pelvic examination generally makes the diagnosis clear.

Vesico-vaginal Displacement.—The downward drag of the bladder in the erect posture causes an aggravation of the symptoms which may be associated with some degree of incontinence of urine. Restoration of urethral support should accompany the colporrhaphy.

Cystalgia.—An irritable bladder without a local cause is something which is seen less and less as the surgeon's skill in searching improves; but a solitary vesical inflammatory lesion (Hunner's ulcer) is exceptionally present.

Conclusion

By far the commonest causes of frequency of micturition are bladder-neck changes and a localized irritation in the posterior urethra. The latter is commonly a mild simple chronic inflammatory state, but later may be followed by other changes.

Children as well as adults are affected.

Urethroscopy is essential in many cases.

The great majority of patients respond to local treatment.

Next Refresher Course Article.—"Anaesthesia for Minor Procedures," by Dr. William W. Mushin.

THE INTERNATIONAL ASSOCIATION OF GERONTOLOGY AND RAPID PROGRESS OF GERONTOLOGY*

BY

V. KORENCHEVSKY, M.D.

(From the Oxford Gerontological Research Unit, Oxford)

Although this paper considers rapid progress of gerontology and the International Gerontological Association, the scheme presented can be applied to any international biological or medical association and congress.

Basis of the Report

The final solution of all basic gerontological problems depends entirely on biological and medical research in this field; and this applies to other aspects of gerontology, such as the socio-economic, and their practical applications in life. In this paper, however, only methods for the rapid progress of gerontological medical and biological research work are considered. This by no means ignores the great importance of the socio-economic aspects of gerontology. It is simply that the medical and biological research must receive a certain amount of unavoidable priority; otherwise gerontology, and in particular geriatrics, will preserve artificially the sickly and miserable plants of senility in their artificial greenhouses. If gerontological research should lag behind the socio-economic welfare measures, the proportion of useless old people among the nations will steadily increase, and at a tremendous cost useless years will be added to their lives and not useful life to their years.

Scientific and medical research workers must leave the care of old people and all other aspects of socio-economic problems to the governments, municipalities, and welfare societies. Science and medicine must concentrate all their efforts towards a rapid advance in gerontological experimental and clinical research. Of course, research workers will gladly give advice and assistance, if asked for it, to the agencies that are engaged in socio-economic gerontology.

Organization of the Man-power for Gerontological Research

As in every venture, man-power is as important as the venture itself. This problem, in its main aspects, was solved at the First International Gerontological Congress in Liége when we established the International Association of Gerontology.

In this Association are united all the gerontological and geriatric societies already established in most civilized countries. In those countries in which such societies do not exist, we are sure they will be formed in the near future and will join the Association. Even at present a powerful and well-organized scientific army is available for attacking the basic research problems of gerontology.

This was the aim of the First International Congress, and for its successful achievement we must be grateful to Professor L. Brull, who was the President of the First Congress and the first President of the Association.

Aims of the Next International Gerontological Congresses

It is logical to consider that there are two urgent aims of the future congresses—to equip the already formed scientific army for a battle with the research problems of ageing and to move this army into action. Without proper equipment an army cannot fight. It is obvious that only the ways and means of achieving these aims could be discussed and approved at the Congress. The actual realization of these aims and the leadership in this great scientific battle have to be entrusted to the charge of the International Association of Gerontology.

It is most desirable that the Association, although responsible to gerontological societies, should not only organize the International Congresses but also report its own activities for their consideration and criticism. The more brains engaged in an active work the better for the venture. For this reason the Association will draw new inspirations and ideas from the congresses, and find not only encouragement but, let us hope, the necessary active support. Moreover, there is a danger that the Association, and especially its governing body, may become senile; but at the congresses they may find new and vigorous blood, absorb it, and thus become rejuvenated.

Organization of the International Gerontological Congresses

At present the international biological and medical congresses take the form either of large symposia organized on a world-wide scale, or, more rarely, of so-called institutes. Both consist of numerous reports, which later are published and can be read. Moreover, for critical consideration of their value it is much more convenient to read them than to listen to them; especially is this so since many reports are made in a language foreign to the speakers. Also, while many of those attending the congresses can easily read foreign languages, they experience great difficulty in understanding them when spoken.

In spite of all this, the usual congresses do some definite and important work: they spread a special knowledge among practitioners not engaged in research work and the public at large; and they provide an opportunity of establishing personal contact both between research workers and practitioners, and between research workers themselves.

Such congresses, however, contribute comparatively little to the rapid progress of research work, and therefore do not fully justify the heavy expenses entailed, the extensive organizing work done, and other considerable difficulties involved—for example, travelling by the delegates.

It is desirable, therefore, to adjust the congresses to the needs of the research worker, at the same time retaining their other useful points. To this end no revolutionary methods are advocated, but only a desirable adjustment and improvement in organization.

Research Sessions of the Congress

It is desirable, and probably necessary, to adapt the sessions of international congresses for the service of two main types of members. The usual "symposia sessions" should be preserved as being of most use to and interest for the practitioners in the fields of medicine and biology. Special "research sessions," however, should be introduced for research workers, to run simultaneously with the former. These research sessions are actually "brains trusts." They will consist chiefly of free round-table discussions by the specialists, for each specialty separately and also for the joint meetings of various specialties.

The aims of these sessions will be the organization and promotion of gerontological research work—in particular, those problems of gerontology which were investigated insufficiently or not at all; consideration will also be given to schemes and methods which might be used for investigation of these problems. In this way the most promising research schemes will be evaluated and recommended. In the following years the progress achieved in research will be discussed and the necessary adjustments and alterations made. The efficient work of these "brains trust" sessions is due not only to the collection of the individual opinions of

*The paper was read at the Opening Session of the Second International Gerontological Congress, held on September 9, 1951, in St. Louis.

the specialists; much more is it due to the specialists' combined efforts to obtain the best possible solution of the problems.

In fact, the "research sessions" have to be similar in organization to those international war committees which so successfully achieved the splitting of the atom. In a more general way this was suggested in my previous papers (Korenchevsky, 1946, 1947, 1948, 1950a, 1950b); and for the same idea of co-operation the whole organization of gerontological societies was devised and started in 1939 as an *International* Club for Research on Ageing. In 1950, for several good reasons, the club was superseded by the International Gerontological Association.

We are most grateful to Professor E. V. Cowdry, who, first in the history of international scientific congresses, had vision of the future and the necessary authority to introduce these sessions, so far in an abbreviated form, into the Second International Gerontological Congress.

Desirability of Permanency in the Work of "Research Session Committee"

There is little if any hope of completing the difficult task of the session in a few hours at the congress. Therefore it is desirable that the session should not only work through the whole duration of the congress but also become a permanent organization and continue its work in the intervals between the congresses. It can be given any name which the congress or the Association finds suitable. To avoid confusion it will perhaps be appropriate to call it simply "research session or committee of the International Association of Gerontology," and to use this name even during the congresses. It is desirable that in the intervals between the congresses, if the finances allow, the meetings of the session should be held once a year, preferably in those cities in which the large research centres interested in gerontology are situated. An executive committee of the session should meet more often.

Other Ways and Means for Rapid Progress of Gerontological Research

These have already been discussed in previous papers (Korenchevsky, 1946, 1947, 1948, 1950a, 1950b). They have been approved by the British Society for Research on Ageing. The proposed measures are similar to, or identical with, those discussed in the *Journal of Gerontology* (1948). The necessary measures may be summarized as follows:

1. Large funds must be available for financing gerontological research in all its manifold aspects.

2. In each civilized country permanent experimental and clinical laboratories or institutes for research on ageing have to be established, if they do not already exist, and be provided with adequate resources.

3. The formation of a sufficient number of groups of research workers, who would specialize in gerontological or geriatrical research, is necessary. Obviously points 1 and 2 are essential for this purpose.

4. It is essential that the existing biological and medical laboratories and research hospitals should co-operate in gerontological research. Long-term grants must be provided for them.

Referring to my previous papers for the details concerning these measures, I should like to add a few words about the urgency of collecting the funds for gerontological research. Sooner or later the various governments must contribute to this research if they intend to prevent the prolongation of a useless life span and the premature ageing of their peoples.

Since it is difficult to arrange otherwise, voluntary contributions have to be collected by specially established foundations, national and international. One strong point in favour of an immediate start in establishing such foundations is that for every man there is a chance, sometimes a good one, of escaping cancer, arteriosclerosis, poliomyelitis, or some other dread disease; but at present nobody can avoid *premature and abnormal* old age and *premature* death. Therefore our appeal is likely to be understood and supported especially by elderly persons who know what present-day old age means.

Executive Function of the International Association of Gerontology

It is obvious that the Association, strong in its organized unity and co-operative brain-power, representing in its special capacity many countries and nations and therefore possessing the greatest possible authority, is the only agency which can achieve the tasks outlined above. Since the governing body is an actual executor of the Association, especial care has to be taken in making this body truly representative of the respective gerontological societies. The closest co-operation between the governing body and research sessions is also desirable.

It must be recognized that the tasks both of the governing body and of the research sessions will be very difficult; indeed, this activity of the research sessions is the first attempt of its kind in the history of international co-operation in biology and medicine. The reasons why such a very difficult scheme is suggested are: (1) on the basis of experiments performed by other investigators and myself it is now possible to state that there are definite and practicable possibilities of research into the prevention of premature and abnormal old age and premature death; and (2) I personally have little doubt that, unless "research sessions" are introduced, the International Gerontological Congresses are bound to fail in their attempts to organize a rapid advance in research into old age.

Summary

A scheme to promote the rapid progress of gerontological research is suggested; the main items of this are:

1. The establishment of a permanent research session or committee which would work during and between the International Gerontological Congresses. The organization of this session or committee should be somewhat similar to that of the international committee for splitting the atom.

2. Provision of large funds both for gerontological research and for organizing work, in particular by means of the establishment of special foundations, national and international.

3. Formation of a sufficient number of groups of research workers in gerontology.

4. Co-operation of different existing biological and medical laboratories and research hospitals in gerontological research.

5. The International Association of Gerontology, in particular its governing body, is suggested as the executive agency of the scheme.

REFERENCES

Editorial. *J. Gerontol.*, 1948, 3, 141.
Korenchevsky, V. (1946). *British Medical Journal*, 2, 468.
—— (1947). *J. Gerontol.*, 2, 54.
—— (1948). *British Medical Journal*, 1, 728.
—— (1950a). *Transactions of the Conference on Problems of Ageing*, p. 174, edited by N. W. Shock. Josiah Macy, jun., Foundation, New York.
—— (1950b). In *Social and Biological Challenge of Our Ageing Population* p. 7. Columbia Univ. Press, New York.

It has been known for some time that, although eserine and prostigmin both inhibit cholinesterase, only eserine applied to a nerve axon stops its activity. Likewise, stilbamidine, which has a curare-like action, also produces block, whereas D-tubocurarine does not. It has now been shown (*Nature*, February 2, p. 190) that this is a permeability effect. If the substances in very low concentration are injected into the insides of nerve axons they all cause block. The previous inactivity of some substances is the result of their inability to penetrate unaided into the axon and reach its impulse-producing machinery.

CENTENARY OF "GREAT ORMOND STREET"

BY

T. TWISTINGTON HIGGINS, O.B.E., M.B., F.R.C.S.

Senior Surgeon, Hospital for Sick Children, Great Ormond Street

In the England of a hundred years ago most children received but scanty consideration. Many of them died in infancy and so escaped much suffering. All too often those who survived were caught up in the industrial revolution. They toiled for long hours in coal-mine or factory, and lived in a deplorable environment of overcrowding and dirt. They were inadequately or wrongly fed. Even among the well-to-do there was little understanding of infant and child nurture, either physical or psychological. The death rate among children was appalling, and no wonder. Of London's 50,000 annual deaths, 21,000 were those of children under the age of 10. Rickets became known as "the English disease."

The grievously stunted, deformed, and battered bodies of many fellow citizens are still to some of us a vivid but grim memory of our youth, and our pathological museums display evidence of diseases of a type and degree now happily mainly a matter of historical interest.

Awakening of the Social Conscience

Yet, despite the general preoccupation of the public with industrial expansion and its indifference to the sufferings of children, the fire of reform was well alight among some social workers, ministers of religion, doctors, writers, and politicians, of whom Lord Ashley (later Lord Shaftesbury) especially championed the children's cause. In such a company, Dr. Charles West must always stand pre-eminent for his service to children. After two years as a medical student at St. Bartholomew's, West completed his course at Bonn, Paris, and Berlin, becoming M.D.Berlin in 1837. Then, after studying midwifery in Dublin, he practised as a physician and accoucheur, lecturing on midwifery at the Middlesex Hospital. But soon his main interest became focused on the diseases of infancy and childhood, a subject upon which he delivered a course of lectures. These were published in 1848 in a book which passed through many editions and was translated into several foreign languages. The material in it was based on West's experience as physician to the Royal Universal Dispensary for Children from 1839.

Institutional provision for sick children was at that time virtually confined to such out-patient dispensaries. The earliest in London was founded in 1796 in Red Lion Square by Dr. George Armstrong, and dealt with 1,200 patients annually. The Royal Universal Dispensary dated from 1816 in St. Andrew's Hill, Doctors' Commons. In 1822 it removed to the Waterloo Road to a special building designed to accommodate 50 to 100 beds. Owing to the death of the chief founder, however, the beds never materialized.

Few children were admitted to adult hospitals in those days. In 1843, of 2,363 patients in all the London hospitals only 26 were children under 10. Guy's had 15 "cribs" in a wooden building "over stables," which were demolished in 1850 and not replaced. Admission of young children to adult hospitals was generally prohibited, except for those requiring "amputation" or "cutting for the stone."

Dr. West Founds a Children's Hospital

West, moved by the urgent need of in-patient facilities for sick children, determined to found a special hospital for them. He had to contend with much opposition. The difficulties of nursing and the risks of infection were cogent arguments against such a project. The early experience of the Foundling Hospital was relevant; of the first 15,000 children admitted only 4,400 lived to grow up.

Yet in Europe there were already 17 children's hospitals, and West knew well of their growing success and value. He was undeterred by opposition and found strong support among senior colleagues, notably Bence-Jones, of Guy's, who gave much help in soliciting influential interest. West visited children's hospitals abroad and elaborated the practical details of his scheme, which was eventually launched at a public meeting on March 18, 1851. Soon it received powerful support. Queen Victoria subscribed £100 and became the first Patron. Lord Shaftesbury became president. Charles Dickens wrote a moving magazine article, and funds began to accrue. With a sum of £2,483 6s. 3d.

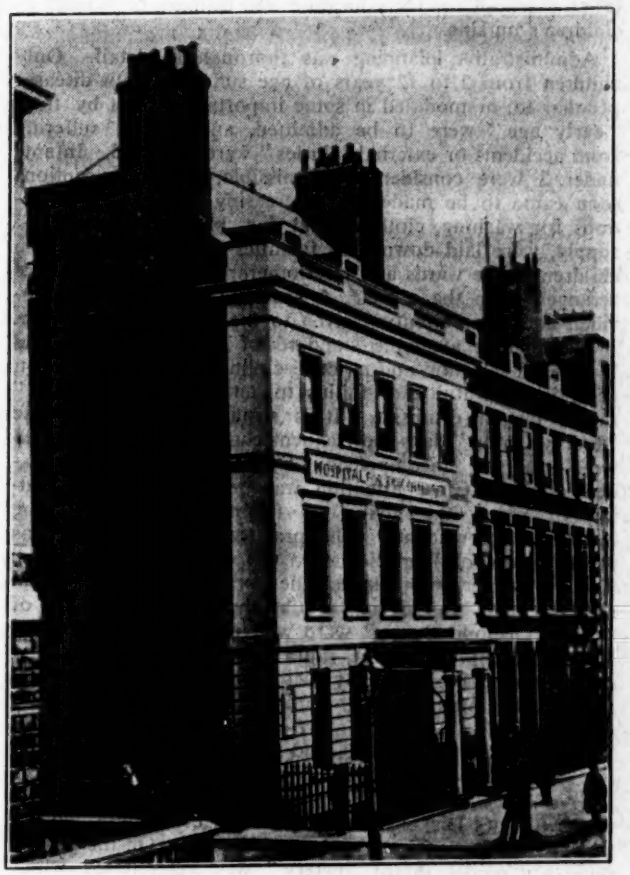


FIG. 1.—Dr. Mead's house at 49, Great Ormond Street after being taken over as the "Hospital for Sick Children."

in hand, the provisional committee was emboldened to seek a convenient house in which to make a start; and West happened upon 49, Great Ormond Street, a spacious late seventeenth-century house which had once been the residence of Dr. Mead, physician to Queen Anne, whose professional and social attainments had been matched by his lavish hospitality. The house (Fig. 1) had a large garden and afforded additional accommodation in Dr. Mead's former library and museum.

A lease was arranged and the necessary alterations were made to adapt the reception-rooms as wards and the library as an out-patient department. The institution was first called "The London Hospital for Sick Children," but subsequently the word London was omitted.

In December, 1851, the first matron, Mrs. Willey, was chosen from many applicants, and on January 2, 1852, Dr. Charles West and Dr. William Jenner were appointed physicians, and Mr. G. D. Pollock surgeon, the last-named being succeeded in March, 1852, by Mr. Athol Johnson. On St. Valentine's Day, 1852, the hospital was opened, and three days later the first patient was admitted. Eliza Armstrong, aged 3½ years, suffering from "consumption."

The Founder's Intentions

The accepted aims of the new hospital were:

1. To provide for the reception, maintenance, and medical treatment of the children of the poor during sickness and to furnish advice to the mothers of those who were not admitted.

2. To promote the advancement of medical science with reference to the diseases of childhood and to provide efficient instruction of students in the same.

3. To disseminate among all classes, but chiefly among the poor, a better acquaintance with the management of infants and children during illness by employing the hospital as a school for the education and training of women in children's nursing.

Administrative planning was thorough in detail. Only children from 2 to 12 years of age suffering from diseases peculiar to, or modified in some important respect by, their "early age" were to be admitted, and those "suffering from accidents or external injuries" were excluded. Infants under 2 were considered inadmissible, though exceptions soon came to be made with increasing frequency. Directions for washing, clothing, and diet, particularly the milk supply, were laid down, and facilities for education of the children in the wards and physiotherapy in the garden were arranged from the outset. A special fever ward was provided and close attention given to the control of infection.

The highest available standard of nursing was ensured by careful selection and strict discipline. Striking a patient, accepting a gratuity, or failing to "make children happy" meant instant dismissal. It is remarkable that in those "Sairey Gamp" days the frequent changes of staff recorded were due to incompetence rather than serious misdemeanours. Close attention was devoted to the recording of cases, the giving of formal lectures, and the instruction of students. The practice of the hospital was to be "open to all medical men on presenting themselves." To Dr. Jenner was allotted the formation of a museum and library. No one can doubt that the foundations of "Great Ormond Street" were well and truly laid. Proof was soon manifest in the rapid growth of the popularity of the young hospital. By October, 1853, the out-patient sessions, beginning at 8.30 a.m., were making the visiting doctors late for lunch, and more and more beds were needed. The original 10 became 20, and ultimately 30. Dr. Mead's old house was stretched to its utmost capacity. In 1858, after a successful appeal for funds at a festival dinner at which Charles Dickens presided, the adjacent house, No. 48, was acquired, providing much-needed relief. On the ground floor a "model infant nursery" was inaugurated which proved "an unqualified success."

Years of Expansion

From 1858 to 1872 the work of the hospital expanded steadily. Dr. Jenner retired in 1866, and his place was taken by Dr. Thomas Hillier. Four assistant physicians were added—Drs. George Buchanan, W. H. Dickinson, Sydney Ringer, and Samuel Gee. Mr. Timothy Holmes became surgeon and Mr. Thomas Smith assistant surgeon. The reforms and teaching of Florence Nightingale had already made possible the appointment of a trained lady superintendent and the birth of the hospital's modern nursing tradition.

In the late 'sixties plans were begun for building the special hospital which had always been West's aim. The old houses were becoming increasingly inadequate and troublesome. The foundation-stone of the new building designed by Mr. E. M. Barry, fronting Powis Place, was laid by the Princess of Wales on July 10, 1872, and the structure was completed in 1877 with accommodation for 120 beds, including the North Block for fever cases, the gift of the Misses Cohen, and the chapel, built and very generously endowed anonymously.

Meanwhile, in order to provide for convalescent children and to relieve in some measure the parent institution, the lease of historic Cromwell House, Highgate, was taken in 1869. This was replaced in 1927 by the present country hospital at Tadworth Court, Surrey. Dr. West finally retired in 1875, having seen his children's hospital well established. To no one man does "Great Ormond Street" owe so much.

In 1880 the original houses, having become insanitary, were demolished. The need for further building became more pressing year by year, and in 1887, to commemorate Queen Victoria's jubilee, the children of the Empire subscribed a large sum and the South Wing, fronting Great Ormond Street, was completed. It was opened on June 4, 1893, the bed complement then being 240. The hospital now had a worthy building (Fig. 2) to which the only significant later addition was the Out-patient Department, the munificent gift of Mr. William Waldorf Astor, opened on August 4, 1908.

The old structure, so well known to many, endured until the birth of the modern hospital in 1937, but so rapid was the progress in paediatrics, in which Great Ormond Street's own pioneer influence never declined, that long before this

FIG. 2.—The second building, which was started in 1872 and added to in 1887 and 1908.

date the building of 1893 had become outmoded. Happily the significance of a hospital is not to be measured in bricks and mortar.

Research and Teaching

The reputation of the Bloomsbury hospital, based on the splendid work of the early staff in research and teaching and by that of their successors, notably Cheadle, Barlow, Lees, Owen, Morgan, and Pitts, was now firmly established and widespread. It was yet to increase and attain international stature. To the hospital's service were attracted men and women of the highest skill and vision as physicians, surgeons, nurses, and administrators.

Intensive study, unceasing investigation and research inspired the daily routine, promoting a steady advance in the knowledge and understanding of the ailments of childhood. The hospital's growing fame drew patients, often with rare diseases, from far and wide, so providing the unique opportunities which still prevail. Doctors from all over the world, and notably from the Empire, came in ever-increasing numbers, so that postgraduate teaching came to be a major activity.

New departments soon sprang up, notably those of bacteriology and radiology, with which the names of Nabarro and Ironside Bruce must always be honourably associated. The names of Garrod, Voelcker, Still, Batten, Colman, Poynton, Thursfield, Robert Hutchison, Langmead as physicians, and those of Arbuthnot Lane, Kellock, Corner, Waugh, Addison, Fairbank, and Tyrrell Gray as surgeons proclaim the quality of those vintage years which preceded 1914.

The end of the first world war presented a new challenge, for it was clear that the old hospital buildings had outlived their day. In wards of 30 beds with inadequate sanitary arrangements, respiratory and gastro-intestinal infections could not be adequately controlled, particularly in infants. More rigid isolation was essential. Moreover, the comfort and health of the nursing staff, the growing demands of modern specialized treatment, research, and teaching could no longer be worthily met. Complete rebuilding became essential. A plan to rebuild the main hospital in the country, retaining only an out-patient department and a small emergency unit in Great Ormond Street, was abandoned, but as a compromise Tadworth Court was acquired with a view to its development as a country branch for suitable subacute and long-term cases. Pavilions were ultimately built in the park, and this branch has proved a valuable asset and offers great potentialities.

The Modern Hospital

Meanwhile, the planning of the new parent hospital was entrusted to Mr. Stanley Hall, and much thought was given to the details by the medical staff. To rebuild completely on the existing site without seriously disrupting the hospital's work presented no small problem. A golden opportunity seemed to offer itself when the adjacent Foundling Hospital site became vacant, but efforts in this direction failed, and it was decided to proceed in stages to minimize dislocation. In 1937 a start was made on the Nurses' House, facing Guilford Street, the foundation-stone being laid by the Princess Royal, the hospital's president. This building, when completed, gained for Mr. Stanley Hall the medal of the R.I.B.A.

The main hospital block was opened in October, 1938, by King George VI and his consort. It has since been dedicated as the Southwood Building in memory of Lord Southwood's outstanding chairmanship. The ward units each accommodate 10 children, four being in separate cubicles permitting complete segregation, and all giving on to open-air balconies. Each unit is equipped with bathroom, lavatories, sluice-room, kitchen, day-room, and parents' waiting-room. Experience has amply confirmed the value of these arrangements. Modern operating suites, routine pathological and research laboratory accommodation, museum, clinical lecture theatre, kitchens, milk-room, and so on are all on the most modern and generous lines. Beds are provided for nursing mothers.

The building of the next block, the new out-patient department, was interrupted by the outbreak of war in 1939. During the intervening years the out-patient work and that of other departments—radiology, records, and physiotherapy—have had to be carried on in buildings which were intended only for temporary use. This has been a grave misfortune, particularly when the demands of postgraduate teaching, expanding special departments, as well as the out-patient work itself have been surpassingly urgent. At long last it is hoped that the rebuilding programme may shortly be resumed. During the war children were evacuated to units in the country staffed by the hospital, leaving only a few beds for children in London, where air-raid casualties were catered for. On September 9, 1940, the hospital building was seriously damaged by bombing. Fortunately no one was injured.

Institute of Child Health

Towards the end of the war a gradual resumption of normal work became possible, and increasing attention was given to plans for the future. Additional special departments, the intensification of research, and the inauguration of the Institute of Child Health were proceeded with. In collaboration with the University of London, the trustees of the Nuffield Foundation, and the local authorities, the Chair of Child Health was founded, and in 1945 Dr. Alan Moncrieff, physician to the hospital, became its first occupant. Under the National Health Service the hospital was designated a "teaching hospital."

Such is the outline of a century of progress from the courageous venture of Charles West and his colleagues in Dr. Mead's old house to the far-famed hospital of to-day. If in this brief history the doctors' part may seem to take precedence, they all would acclaim the essential contribution made by others: by their nursing colleagues, justly appreciated the world over for their skill, loyalty, and gentle devotion; by the splendid comradeship, wise counsel, and unstinted labour which has always come from the great-hearted lay folk who have served as members of the board of management or as professional administrators and faithful servants; by the general public, who have never failed in abundant generosity.

The fullest realization of the ideal of "Great Ormond Street" would see such a triumph of prevention as would soon empty the hard-pressed beds. That consummation is not yet, and the second hundred years open with no diminution of opportunity or weakening of purpose.

The two illustrations, kindly supplied by Odhams Press, Ltd., are taken from the book by Mr. T. Twistington Higgins entitled *Great Ormond Street* shortly to be published.

SCIENTIFIC EXHIBITION AT JOINT ANNUAL MEETING

The Council of the British Medical Association, in agreement with the Irish Medical Association, has decided to hold a scientific exhibition at the Joint Annual Meeting in Dublin this year (July 3–11). This is the first time that such an exhibition has been held. The exhibition will be in addition to the usual trade exhibition, and will be located in a large hall adjoining the latter. The object is to display new ideas in all branches of medicine to those attending the Annual Meeting.

On this first occasion the exhibition will necessarily be on a small scale. The pattern followed will be the exhibition held at annual meetings of the American Medical Association. Originality in the design of exhibits will be welcomed. Charts, drawings and transparencies, specimens, and other material can be enhanced by a judicious use of light and colour. The expenditure of much money is quite unnecessary. Many teaching hospitals and medical schools, for instance, already have exhibits of their work, and these could be taken to the Annual Meeting as personal luggage. No difficulty with the Customs is anticipated in this connexion.

Details for Exhibitors

A series of booths will be provided for exhibitors. Each booth has three walls, 8 ft. in height. The back wall is 10 ft. wide and the two side walls 6 ft. No part of any exhibit may extend above the top of the booth. A shelf, 2½ ft. from the floor and about 1 ft. wide, will be fixed all round the booth. Chairs will be provided. Fluorescent lamps will be fitted to the top of the walls, but lamps can be omitted on the request of the exhibitor if he wishes to show transparencies or cases with indirect lighting. Electric points (A.C. 200/240 volts) will also be fitted.

The exhibitor will be expected to pay the cost of the preparation, transportation, and installation of his exhibit, but no other expense will fall on him unless he requires alterations to the booth or special construction. Although it is hoped that the latter may not be required, any special demands will be dealt with sympathetically so far as possible. The cost of such alterations will be borne by the exhibitor.

No motion pictures will be shown in the booths, but separate arrangements will be made for these elsewhere. Exhibitors are expected to provide their own transparency cases for slides or *x*-ray films. There is ample free storage space for packing-cases.

Exhibits should be shown in the name of an individual person (or persons), who must be a member attending the Annual Meeting. The name of the hospital or institution at which he works may appear as part of the address.

The booths will be ready for the installation of exhibits by Sunday, July 6. Installation should be completed by 6 p.m. on Monday, July 7.

Reservation of Space

All applications for space at the exhibition should be received by March 31.

Those from the Irish Republic: To the Committee of Scientific Exhibits, Irish Medical Association, 10, Fitzwilliam Place, Dublin.

Those from the United Kingdom: To the Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.

Intending exhibitors are urged to apply for space as early as possible. Applications must be accompanied by brief details of the proposed exhibit.

Demonstration of Exhibits

Admission to the scientific exhibition will be limited to members of the medical profession. The general public will not be admitted.

The exhibition will be open all day, but specified times will be allotted in the Meeting programme for viewing the scientific exhibits, when one or more competent demonstrators should be present in each booth to answer questions. Personal demonstration is of the greatest value to both visitor and demonstrator alike, and is without doubt the most important single item in ensuring the success of an exhibit.

Nova et Vetera

A SEVENTEENTH-CENTURY SCOTTISH CHEMIST

William Davidson of Aberdeen. The first British Professor of Chemistry. Tercentenary Memorial Lecture given in Aberdeen, November 26, 1948. Aberdeen University Studies No. 129. By John Read, Ph.D.(Zurich), M.A., Sc.D. (Cantab.), F.R.S. (Pp. 32. No price.) Aberdeen: The University Press 1951.

Despite several illustrious names, Boyle and Hooke among them, chemists did not flourish on British soil in the seventeenth century. "The first British Professor of Chemistry" is the title that Professor Read gives to William Davidson (1593–1669 ?), of Aberdeen. Taking example, and perhaps advice, from his eminent fellow-townsman, Duncan Liddel (1561–1613), Davidson decided that it was more desirable for him, "a third son, to . . . live industriously and honestly among foreigners than in poverty and degradation among [his] own countrymen." After graduating, therefore, he left for Paris, where he spent most of his active life teaching "chemistry" and practising medicine.

In 1644 a decree came into operation preventing foreign physicians not belonging to the Paris faculty from practising there. For some reason Henrietta Maria, the English queen, intervened on behalf of Davidson. He was thus appointed physician to the king, which absolved him from the interdict. In 1648 he became professor of chemistry at the Jardin du Roi, becoming thereby the first occupant of such a chair in France and also the first native of the British Isles to hold such a chair. In 1651, perhaps because of the rising intolerance of the Catholic party, Davidson left Paris for Warsaw to become physician to King John Casimir. In this new position he had to abandon chemistry, and his life became disturbed by wars and political intrigue. In 1669 he returned to Paris, but died soon after.

It cannot be said that Davidson's chemical achievements were important. He was a follower of Paracelsus (1493 ?–1541), whose doctrines, whatever their original value, had become by Davidson's time an obstacle to any scientific development. Professor Read discourses, with his usual charm and learning, upon the work of Davidson. In forming an estimate of its value he exhibits both patience and charity. These high virtues are peculiarly necessary in dealing with the later "alchemists," especially those of the Paracelsan school. The brochure is beautifully and suitably illustrated.

CHARLES SINGER.

Reports of Societies

BRITISH ALLERGISTS

The annual general meeting of the British Association of Allergists was held at 1, Wimpole Street, on February 2. About 60 members and guests were present. At the morning session the chair was taken by Dr. D. A. Williams, president of the Society.

Allergic Rhinitis

Dr. H. A. LUCAS read a paper on the histopathology of rhinitis, which was illustrated by lantern slides of photomicrographs. He drew attention to the effect of various forms of non-specific injury leading to congestion of the erectile tissue and loss of the protective mucus layer which is normally in contact with the mucous membrane. Subsequently, paralysis of the ciliated epithelium with eventual metaplasia was associated with stagnation of mucous secretion. At this stage there was increased susceptibility to allergic sensitization. Infiltration of eosinophil cells and the presence of numerous plasma cells were demonstrated in allergic processes, whereas in acute infection there was a polymorphonuclear leucocytosis and in non-suppurative sinusitis a lymphocytosis.

The Eosinophil Response

Dr. J. PEPYS described an extensive series of experiments in animals and man designed to determine the primary and secondary factors responsible for local and general eosinophil responses. Evidence was put forward to show that the nucleotides, especially adenosine triphosphate, might be one of the primary factors in local responses, and guanylic acid in general responses. Secondary factors which enhanced the response were histamine or parasympathetic stimulation, either by drugs such as pilocarpine and acetylcholine or by direct vagal stimulation.

Limitations of A.C.T.H.

Professor G. W. PICKERING then gave an account of experiments carried out at the medical unit at St. Mary's Hospital. A survey of the literature had shown that the effects of adrenocorticotrophic hormone (A.C.T.H.) in asthma and hay fever were equivocal, except in infective asthma, in which they were conspicuously good. At St. Mary's the effect of A.C.T.H. on the skin's response to injury by serial dilutions of a number of substances had been studied. It had been shown that A.C.T.H. failed to modify the triple response caused by histamine, morphine, and pollen in sensitive subjects, but some modification of the effect of silver nitrate had been obtained. In two cases of atropine sensitivity the response to a patch test had been inhibited. The tuberculin test was definitely reduced in all cases. Others had shown that A.C.T.H. had no effect on the maximum breathing capacity of pollen-sensitive subjects exposed to the effect of pollen by aerosol inhalation. Professor Pickering had found no evidence that A.C.T.H. could affect either the liberation of histamine or its action on the tissues, although some forms of dermatitis and bacterial allergy were modified by the hormone.

Mode of Action of Antihistaminic Drugs

In the afternoon the chair was taken by Sir Henry Dale.

Dr. B. N. HALPERN (from Paris) discussed the mode of action of synthetic antihistaminic drugs, his observations being mainly based on animal experiments. In addition to their well-known antihistaminic and anti-allergic effects, these drugs had a powerful action in a number of other experimental and clinical syndromes, which possessed in common a disturbance of capillary permeability with the production of local or general oedema. The oedema fluid in these syndromes contained a high confent of protein.

They included shock produced by injection of colloidal dyes, egg-white and dextran induced oedema of rats, acute pulmonary oedema, histamine shock, infective oedema, and various forms of inflammatory reactions. It could be assumed that histamine was the agent responsible for the production of all these conditions. The effect of antihistamines in preventing the haemoconcentration that occurred when animals were exposed to some of these agents was demonstrated. It was pointed out that adrenaline had a parallel effect, and Dr. Halpern suggested that both adrenaline and the antihistamines produced their effect by increasing the tone of the pre-capillary sphincters, thus lessening the flow of blood through the capillaries and favouring the reabsorption of oedema fluid. Histamine had a reverse effect. The synergistic effect of adrenaline and the antihistamines could also be demonstrated. This reduced the antagonism histamine–antihistamines to a particular case of their general competition on the smooth musculature. In reply to a question by Professor Pickering, Dr. Halpern said that the effect of antihistamines introduced locally into the skin differed from that of adrenaline, causing erythema and even local necrosis, instead of pallor.

Dr. Halpern suggested that the relatively poor effect of antihistamines in asthma might be related to the size of the antigenic particle. In asthma caused by sensitivity to large molecules such as those from feathers, hairs, horse dander, and animal proteins, their prophylactic effects were generally excellent. This contrasted with the results in asthma caused by dust, pollen, and bacterial infections where the antigen was supposed to be a polysaccharide molecule of rather small size.

Clinical Use of Antihistaminic Drugs

Dr. C. J. C. BRITTON then gave an account of the clinical use of antihistamines in allergic conditions. He had found them to be of greatest use in urticaria, angioneurotic oedema, and hay fever. In asthma in adults they were disappointing, but were sometimes valuable in cases of mild nocturnal asthma when any sedative side-reaction added to their effect. In asthma in children, however, they were very valuable when prescribed in the form of an elixir. The efficacy of the different drugs varied considerably with the individual patient, and it was essential to try a number of different types before abandoning their use. He drew attention to the many unpleasant side-effects of these drugs, and, though the more severe of these were uncommon, they could be extremely serious. Antihistamines were often individual in their action, and one drug might be tolerated when others would cause side-effects. He recorded his personal knowledge of patients who had been involved in car accidents following the use of antihistaminic drugs. Since in law the charge preferred against the driver who found himself in this predicament was "acting under the influence of alcohol or drugs," it was no defence to show that antihistamines were responsible. For this reason, patients should be advised to take the first dose of an antihistaminic drug at a time when it was convenient to observe any unpleasant side-effects that might develop, and never before carrying out any activity requiring an act of judgment. The first dose should always be small, and in the absence of side-effects it should be increased until the desired relief from symptoms was produced or side-effects noted.

Dr. Britton was not in favour of continuous administration of antihistaminic drugs prophylactically over a long period of time, but considered that they should be used chiefly as symptoms occurred. He was inclined to agree with certain American authors that the use of these drugs alone in hay fever favoured the development of pollen asthma. Certainly the proportion of cases of hay asthma now seen was very much greater than four or five years ago. Other factors might be important in this increase in hay asthma, but many things pointed to the antihistaminic drugs being the significant factor. A prolonged discussion followed these two papers.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

Stellate-ganglion Block

SIR,—With reference to the work of Professor René Leriche (February 2, p. 231) on stellate ganglion infiltration in cases of cerebral ischaemia, it is interesting to note that similar results can sometimes be produced by ganglion-blocking drugs. May I refer to a recent article in the *Practitioner* (1951, **167**, 641)? A more dramatic sequel occurred recently. I was called to see an old lady who had had her third attack of cerebral thrombosis in a convalescent home after being discharged from my wards at St. John's Hospital. When I examined her she was comatose and collapsed. Having no apparatus for a stellate ganglion block available, I ordered 5 ml. of tetraethylammonium bromide (T.E.A.B.) to be given by intramuscular injection at once. Two days later I returned to see the patient again. To my great surprise I found her dressed and downstairs, carrying a large pile of plates to help with the work of the housekeeper.

Another case occurred with a patient convalescing after hemiplegia due to cerebral thrombosis. She had been sent home from hospital on a trial holiday. She suffered another cerebral vascular accident and was sent back to hospital in an ambulance by her doctor, who doubted whether she would survive many hours. Again my intramuscular injection of 5 ml. of T.E.A.B. roused this lady from her coma, and the next day she had returned to the level of convalescence which had been previously present.

I feel that, while one swallow does not make a summer, these two rather dramatic examples of recovery may indicate that ganglion-blocking drugs have a place in the treatment of cerebral vascular accidents.—I am, etc.,

London, S.W.11. TREVOR H. HOWELL.

SIR,—The very stimulating and interesting article by Professor René Leriche (February 2, p. 231) on stellate-ganglion block suggests to me that some of your readers may like to know of a simple technique which may be employed to effect the block. This was described by Virginia Apgar in *Current Researches in Anaesthesia and Analgesia*, 1948, **27**, 53. She advises that the patient should lie in the supine position, with head turned away from the operator. A wheal is raised just above the clavicle, and immediately lateral to the sternal head of the sternomastoid muscle, and through it a 2½-in. (7.2-cm.) needle is inserted directly backwards until bone is met; this is the lateral part of the anterior aspect of the body of the seventh cervical vertebra. As the ganglion and sympathetic chain lie on the longus capitis and longus colli muscles, and not on the periosteum, the needle point is withdrawn for 0.5 cm., and after aspiration tests for blood and cerebrospinal fluid have been proved negative 5 ml. of 2% procaine solution is injected. Horner's syndrome develops very rapidly. The carotid sheath, containing the great vessels and the vagus, lies lateral to the point of injection. This technique is just as simple to perform as it sounds.—I am, etc.,

Westcliff-on-Sea. J. ALFRED LEE.

Educating the Public about Cancer

SIR,—We were interested in Professor A. Rendle Short's letter on this subject (February 2, p. 276) and agree with the views he states. Since people are urged to consult a doctor directly the first symptoms of cancer appear it is logical that

they should be told what these are. There is no reason why careful educational work in cancer should not produce the same good results as in other diseases, notably tuberculosis. We have described elsewhere (*Lancet*, 1951, 2, 495) the experiences of the Chelsea Cancer Education Committee and the methods adopted in this borough. Briefly, our work so far has been the organization of lectures and discussions and the careful distribution of leaflets with a questionary attached to help us in learning more about the response to our efforts. The general opinion was expressed that fear of cancer is chiefly due to ignorance, and more patients would consult their doctors earlier if wise education were given. The replies have been almost unanimous in agreeing that the leaflet we issued is desirable and useful. It is our view that if this subject is presented with care it will do a great deal of good.—We are, etc.,

RONALD W. RAVEN.
JOAN GOUGH-THOMAS.

London, W.1.

Stomach Tube in Trachea

SIR,—During the Christmas holiday I was reminded of the sensitiveness of the laryngeal reflex by a fit of coughing and choking caused by laughing and swallowing the contents of a liqueur chocolate at the same time. In the past I have several times seen expert laryngologists cocainize the cords before passing an endotracheal tube even under a general anaesthetic, showing the respect they had for the laryngeal reflex.

Thinking of these things, it was a great surprise for me to hear the anaesthetist say the other day while inducing a patient, "The tube is in the trachea," and to see her pull 6–8 in. (15–20 cm.) of Ryle's tube out of the larynx.

It is my custom before all stomach operations for the ward sister to pass a Ryle's tube into the stomach just before the premedication is given. The patient sits up, the tube is well lubricated, gently passed through the nose and paid out as the patient repeatedly swallows. In most cases no great difficulty is encountered. In this particular case the tube was passed by a nurse, who had a little difficulty, and the patient coughed quite a bit in the process. Nevertheless the tube was passed through the cords into the trachea and remained there until about two hours later when the anaesthetist wanted to pass her tube.

I do not know if this sort of thing is at all common, but I have never known it happen before. It makes one realize how important it is to make quite sure the tube really is in the oesophagus before giving an intranasal feed.—I am, etc.,

ERIC COLDREY.

Rotherham.

Vascular Spasm

SIR,—Your leader writer both on January 12 (p. 93) and February 2 (p. 262) this year deals with the problem of vascular spasm. On each occasion he advances the thesis that vascular spasm does not occur as the result of nervous intermediation. There are two suggestions supported, one of Kinmonth's that the collapse of the vessel is directly due to the fall in the general blood pressure, the other that the spasm is evidence of a proximal embolism or thrombosis and that according to this view it must always be associated with a preceding organic change.

Dealing with the latter view he seeks Pickering's support. Now Pickering in the *Lancet* a few months ago published a paper citing four cases of thrombosis in the limb vessels which had a previous history interpreted by him as that of embolism. This was purely an inference. If the symptoms and the antecedent history of at least one of them—the first—were examined there was an analogy with a case of Handler's (*Lancet*, 1949, 2, 514), in which previous to the planned embolectomy the similarity was complete. But on exploration no embolus or thrombus was found in the external iliac, which had been suspected. Instead there was a marked spasm of a fair portion of the vessel's length. Presacral sympathectomy was instantly performed and there was a dramatic release of the spasm. Handler has had brought to his notice similar instances in France. It would be preferable to accept this actual happening in support of a thesis than any amount of inferential data.

Vascular spasm in the retinal vessels undoubtedly occurs. Osman (personal communication) has seen its onset. Many authorities claim that they are far from uncommon. If the spasm is initiated by an organic change in retinal vessels it is a matter of surprise that pregnancy has not been associated with permanent deterioration of vision.

Because continuing spasm can be harmful, and because of the availability of therapeutic measures to relieve it and especially in view of the likelihood of its occurring, it appears to me to be a retrograde step to brand its suggested occurrence as a cliché.—I am, etc.,

JOHN SOPHIAN.

Worthing.

Parkinsonism

SIR,—Dr. Hugh G. Garland's excellent article (January 19, p. 153) calls for comment. In his discussion of medical treatment I was surprised to read that he encounters toxic symptoms from "artane," sufficiently severe to prevent the use of the compound in doses above 20 mg. daily. It has been my experience that it is frequently necessary to use doses between 30 to 40 mg. daily to obtain maximum benefit, and I have a number of patients on such doses with only slight dryness of the mouth—a small price to pay for the benefit obtained—namely, relief of rigidity and increase in mobility.

Post-encephalitic cases are of course a separate group, and, as I have reported elsewhere, doses of artane as high as 100 mg. daily—or of "lysivane" 1,500 mg. daily—are, in my experience, frequently necessary to produce maximal benefit.

I must also disagree with Dr. Garland's statement that oculogyric crises never respond to any of the new remedies. I find both artane and lysivane materially reduce their frequency, but then, as such crises occur only in the post-encephalitic group, a higher dosage than he recommends is almost invariably required. It is probably true that amphetamine has a better effect in preventing these distressing crises, but again doses required are frequently of the order of 40 mg. daily or more. Again I find that, once patients have experienced the partial relief that may follow high dosage levels, they are only too glad to continue on the regime.—I am, etc.,

OLIVER GARAI.

London, W.1.

SIR,—I have read Dr. H. G. Garland's account of Parkinsonism (January 19, p. 153). In a mixed group of over 170 patients attending a clinic for the treatment of Parkinsonism I have used all the drugs he mentions in his article, and in certain cases I have made observations different from those of this author.

He states that there is a general feeling that the new drugs—i.e., those that he classifies as synthetic drugs of recent origin—are perhaps more effective than the old drugs and that they certainly seem to produce effects more quickly. My experience confirms this conclusion, but I do not think they represent the whole picture. I venture to suggest that, after treating a large number of cases with the new drugs recently introduced, the drug of choice is "lysivane." "Artane" is very useful when the action of lysivane is disappointing, and in only a few carefully selected cases is the use of "parpanit" and "diparcol" justified. In a recent unselected group of over 50 cases treated with lysivane over the past two years I have had significant improvement in about 77% of all cases treated. I have entirely abandoned the use of the so-called old drugs, as I have found the new drugs so much more effective.

Dr. Garland adds that the main effect of artane is in the relief of rigidity and that its effect on tremor is very questionable. I have found that the effectiveness of both artane and lysivane is chiefly due to their action in diminishing tremor as well as giving almost complete relief of the rigidity.

It has been Dr. Garland's experience that, when a high dosage of these new drugs is given, patients will not tolerate taking so many pills and have voluntarily reduced the dosage so that the final amount taken is not much more than a placebo. I have found that my Parkinsonian patients are most conscientious when taking these tablets.

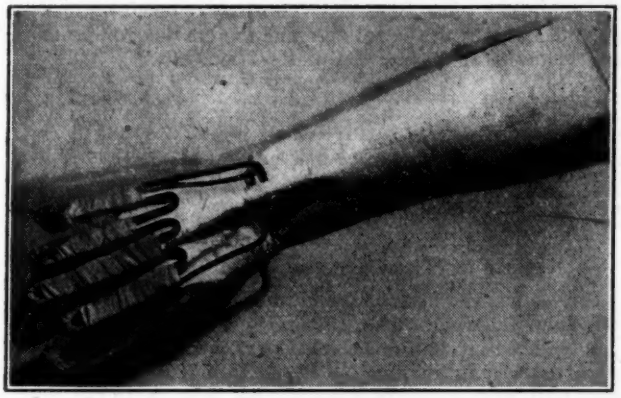
Finally, Dr. Garland states that oculogyric crises never respond to any of the above-mentioned drugs. These crises must be comparatively rare, as in 170 cases of all types I have met with oculogyric crises in only four instances, all of which responded favourably to lysivane.

—I am, etc.,

Birmingham. R. O. GILLHESPY.

A Modified Wrist Splint

SIR,—The illustration shows a method of moulding a simple slab-back plaster-of-Paris splint to give it greater strength and lightness. The patient sits with his forearm prone on a table level with his shoulder. The elbow is at right angles, and the fist clenched lightly. The slab is prepared in the usual way to reach from the knuckles to the elbow, and applied at once to the back of the wrist and forearm. A ridge is pinched up at the angle of the wrist and tapered distally and proximally. The plaster is allowed to set on the patient and then removed for drying before use. It can be sandpapered and varnished.



The advantages are (1) lightness; (2) reinforcement at the angulated part, in contrast with the weakness of a simple slab; (3) longitudinal ridging on the skin surface of the splint, which is less likely to cause soreness than the transverse ridging on a simple slab; (4) it is removable and washable; (5) it can be worn at work in most occupations; (6) it can be made quickly in the surgery by a general practitioner who has no access to perspex. It may be found advantageous to apply this technique to the making of perspex splints.

This splint has been found useful in the following conditions: (*a*) to relieve the pain of tenosynovitis; (*b*) sprains of the wrist joint; (*c*) paralysis due to cerebral thrombosis; (*d*) in the construction of a back splint for the knee of a patient suffering from painful osteoarthritis with flexion deformity; (*e*) in the construction of an instep splint for a patient with a dropped foot.—I am, etc.,

Hornchurch, Essex. I. H. J. BOURNE.

Primary Generalized Arthritis

SIR,—A long-standing interest in chronic arthritis, stimulated by the mass of clinical material available to anyone who cares to pursue this subject, prompts me to comment on Mr. J. H. Kellgren and Dr. R. Moore's article concerning generalized osteoarthritis and Heberden's nodes (January 26, p. 181). For several years I have used the label "hybrid arthritis" to denote the class of cases they describe so accurately under the title of primary generalized osteoarthritis; hybrid, because the radiological changes of degenerative arthritis are associated with clinical changes in the hands *apparently* rheumatoid in nature. The difference between the true rheumatoid hand and the apparent is very well illustrated in their Figs. 2 and 3. I am sure they are correct in describing primary generalized osteoarthritis as a clinical entity.

They make several individual points of importance. The acute onset, particularly in fingers and toes, may very well lead to drainage of a supposed infection, the more often now that the absence of pyrexia may be considered the result of using penicillin; the recognition of the significance of first carpo-metacarpal arthritis makes it fairly easy to recognize this class of case even when Heberden's nodes are absent; and these patients can be assured that they are not going to become what they most fear, a rheumatoid cripple, and this is of the greatest value.

It seems wrong to me to condemn surgical reconstruction of the larger joints *because* other joints are likely to be involved; better to relieve the burden where it is possible.—I am, etc.,

Liverpool. E. N. WARDLE.

Extensive Resection of Small Intestine

SIR,—Mr. H. J. Croot's review on extensive resection of the small intestine (January 26, p. 195) prompts me to describe a case on which I operated a year ago.

This was a young man aged 32 weighing 10 st. 13 lb. (69.4 kg.) who, at laparotomy for an undiagnosed emergency, was found to have a strangulation of a knuckle of mid-ileum through a congenital hole in the apex of the mesentery. The anterior border of this congenital hole was the superior mesenteric artery, which had become occluded by pressure. The distal three-quarters of the small intestine was quite gangrenous, above which was 3 ft. (90 cm.) of congested oedematous jejunum with submucous and subserous haemorrhages, and above this was about 18 in. (45 cm.) of normal bowel up to the duodeno-jejunal flexure.

For the upper limit of the resection to have been through normal gut would have left him with only a few inches of jejunum, so I implanted the oedematous congested jejunum into the caecum, resecting about 18 ft. (5.5 m.) and leaving between four or five (1.2–1.5 m.) of proximal jejunum. I was certain that this anastomosis would not stand the slightest strain, so I did a caecostomy through the lateral wall of the caecum and passed a No. 22 catheter through the anastomosis upwards for about 10 in. (25 cm.).

He made a satisfactory recovery, and the caecostomy began to drain 36 hours after operation and the tube was removed on the fifth day. By the eighth post-operative day he was taking a normal diet, but his morale was rather lowered when he discovered a piece of tomato which he had swallowed a bare 10 minutes previously appear at his caecostomy. He was becoming grossly dehydrated, so a formal intraperitoneal closure of the caecostomy was performed on the 11th post-operative day. He was discharged from hospital on the 29th post-operative day weighing 8 st. 13 lb. (56.6 kg.).

A month later he was having his bowels open eight times a day. His appetite was insatiable. He weighed 9 st. 2 lb. (58.1 kg.). On a fixed diet of 90 g. protein a day the average nitrogen content of the urine was 8.2 g., whereas the faeces contained 13.67 g., showing that very little protein absorption was occurring.

Six months after operation he was back at work. He had completely regained his weight. His bowels acted only twice a day, with a normal formed stool. His appetite was normal. A barium meal shows that it takes one and a half hours for food to reach the caecum. He is absorbing protein normally.—I am, etc.,

Chatham. B. E. CRAWFORD STANLEY.

Pink Disease and Antibiotics

SIR,—Pink disease (acrodynia), which was reported for the first time in this country as recently as 1922 by Thursfield and Paterson (*Brit. J. Child. Dis.*, **19**, 27), now appears to be fairly widely recognized, and in view of the unsatisfactory methods of treatment, and risk of complications, I feel that the successful results I obtained in two recent cases following "chloromycetin" treatment are worth recording.

The first patient, aged 9 months, came to me as a temporary resident from Devon. He had been diagnosed as a case of pink

disease two months before my seeing him, and presented the typical signs of the disease: insomnia, anorexia, wasting, photophobia, profuse sweating, blue and swollen extremities, etc. The mother brought him on account of cough with vomiting, and I suspected pertussis. I prescribed chloromycetin, 50 mg. in capsules four-hourly, to be given in syrup, and this was kept up for the 14 days he remained in my care. During this time he commenced to take regular feeds. His photophobia disappeared. He slept well, gained weight, and in fact ceased to be the miserable child he was when first seen. I thought perhaps this was due in part to change of air and environment, and did not feel inclined to give the medical aspect the whole credit for the improvement.

Since then, however, I have had another almost exactly similar case. The child, a girl aged 1 year, was diagnosed in hospital as pink disease two months previously. She developed pertussis, and again I gave the same dosage as in the previous case, 50 mg. four-hourly. I can say quite definitely that the child was much better when examined a week or two later, and apart from slight insomnia all the earlier severe symptoms had disappeared. She is now quite well.

This case was particularly interesting because an older brother who was breast-fed developed acrodynia at five months. My present patient was bottle-fed and her symptoms occurred after an acute influenzal bronchitis at the seventh month.

Although the aetiology of this disease is still obscure the successful response to chloromycetin, which has been shown elsewhere to be effective against certain virus diseases, would appear to lend support to the hypothesis that pink disease is due to a virus infection against which adults are immune.—I am, etc.,

Uxbridge. A. S. COOK.

The Nutritional Revolution

SIR,—Professor R. A. McCance in reviewing Sherman's book together with two other publications of the F.A.O. (January 19, p. 145) asks rightly whether the triumphs achieved in the improvement of nutrition were really so difficult to win. At the same time he reminds us of the hard task lying ahead in order to avoid the lurking shadow of world famine, especially if those who brought about this nutritional revolution fail to recognize that only an equally revolutionary increase in world food production may prevent what may be the greatest crisis in world history. The direct influence of the nutritional scientist in this respect may be limited by several factors. There are, however, some points which are not always sufficiently recognized in dealing with world food shortage, and in this respect his experience might be useful.

During recent years I referred repeatedly[1] to the work carried out by the Massachusetts Institute of Technology. Harris and his collaborators[2 3 4] systematically analysed some years ago the diet of the poorest section of Mexican and Central American people, which mainly consisted of certain unknown plants growing wild on the Mexican plateau, further of a kind of specially prepared maize-bread (tortilla) and of cheap dried fish (charal). Meat and dairy products were no part of their diet. A surprising adequacy, even abundance, was found in their diet not only in calories but also in specific nutrients like calcium, iron, proteins, and vitamins. When a nutritional survey of 1,000 Mexican schoolchildren was carried out by the same scientists using identical laboratory methods, they were startled to find the nutritional status of the poorest Mexican children to be superior to that of 760 middle-class schoolchildren in Michigan. Other group surveys in Mexico also indicated a negligible incidence of detectable malnutrition or of deficiencies. This work came as a great surprise to all interested in nutrition, and it demonstrated that, in choosing a well-balanced diet, not only the calories and essential nutrients are imperative, but also that it should conform with the dietary customs of the race, and with the geographical availability of the food. Similar further studies would greatly enhance the conservation of available but not universally known food supplies and alleviate anxiety about the adequacy and possible increase of world food resources.

There are some other aspects of the world food problem which escaped the recognition they deserve. With the increasing control of acute infectious diseases and with the large-scale improvement of living standards and of public health, the world population is increasing rapidly. This increase is characterized by the relative ageing of the whole population—i.e., while the total population doubled since the beginning of the century, the fraction of population over 60 years of age became roughly four times larger, with a tendency for further increase of the older age groups. While evidence is accumulating more and more that faulty nutrition may play an important part in many diseases beyond middle age, like hypertension, degenerative heart disease, and chronic mental disorders, comparatively little progress has been made in the elucidation of their relationship. All our effort would ultimately defeat its purpose should it not be possible to raise substantially the general health, working capacity, and mental vigour of those who survived to a higher age.

With the improvement of living conditions in Western civilized countries, like a 40-hour week, motor-cars, modern tools, and greatly mechanized production, the whole aspect of hard work has changed during the last generation. Even in the case of heavy manual workers the work output expressed in calories per day dropped by anything up to 30–40% in comparison with that used up previously. But the need for specific nutrients like proteins, vitamins, and minerals remained more or less the same. It is therefore evident that, unless the quality of our food improves very considerably, we are bound to have a distinctly inferior nutrition compared with that of the previous generation, so far as protective nutrients are concerned. This lower plane of nutrition might be one of the factors causing the craving for proteins and vitamins at the present time.—I am, etc.,

London, W.1. Z. A. LEITNER.

REFERENCES
1 Leitner, Z. A. (1948), *Lancet*, 1, 809; *Observer*, 1951, August 26.
2 Cravioto, R. O., *et al.* (1945). *Science*, 102, 91.
3 Cravioto, B. R., *et al.* (1945). *J. Nutrit.*, 29, 317.
4 Harris, R. S. (1946). *J. Amer. diet. Ass.*, 22, 974.

Cost of T-piece Anaesthetic Technique

SIR,—I have waited for some time for someone to criticize Dr. John Bullough's article (January 5, p. 28) and perhaps you will accept this rather tardy rejoinder. Dr. Bullough does a service in pointing out that breathing against pressure may well increase venous bleeding, but his cure, to my mind, is a grossly extravagant one.

The technique he describes for a radical mastectomy relies largely on thiopentone anaesthesia, and can just as easily be carried out with an ordinary semi-open technique with a Heidbrink valve with no tension on the spring, thus offering practically no resistance to respiration and a total consumption of nitrous oxide and oxygen of 5 litres/min. Even better, such technique would be conveniently carried out with a flow of, say, 2 litres/min. of nitrous oxide, and about 400 ml./min. oxygen with the expiratory valve on no tension and an absorber in the circuit.

The difference between this and Dr. Bullough's technique would be 4 litres/min. of nitrous oxide, or 52.8 gallons per hour. That this is a serious matter in these hard times is obvious by the simple calculation that if all the anaesthetics in the Northampton General Hospital were given by this method it would cost £36 per week, or £1,872 per annum less in nitrous oxide than if done by the method Dr. Bullough suggests.

While one must be ever mindful of one's duty to the patient, and to give him of our best, extravagant techniques should not be used where there are reasonably economical alternatives.—I am, etc.,

Northampton. F. F. WADDY.

Congenital Duodenal Obstruction and Mongolism

SIR,—We were very much interested in the paper by Drs. Martin Bodian, L. L. R. White, C. O. Carter, and J. H. Louw (January 12, p. 77) on the association of congenital duodenal atresia and mongolism. One of us (V. S.) saw a baby in 1948 with both conditions, and a further one in 1951. These babies were recognized as mongols and were not subjected to operation, the duodenal lesion being con-

firmed at necropsy. The second writer (M. C.) had seen a similar case in London in 1947, in which the duodenal lesion was confirmed at operation.

The combination of these two relatively rare conditions seems to us especially significant in so far as it may point to a limited interval of time, when the developmental abnormality leading to mongolism occurs.

Duodenal atresia probably results from a failure of the duodenum to recanalize during the fourth to seventh weeks of gestation. The septal defects unusually common in mongols result from a developmental aberration between the fourth and ninth weeks of foetal life.

Any attempt to explain the condition must also take into account the known rise in incidence of mongolism in the later years of the reproductive period. We feel that a detailed study of the early weeks of pregnancy in mothers over 40 years of age may possibly throw some light on the aetiology of mongolism.—We are, etc.,

V. SMALLPEICE.
Oxford. M. COXON.

Shortage of X-ray Films

SIR,—Following my recent inquiry made through the House of Commons and from the official reply which followed from the Board of Trade, I am informed that they hope to expand the manufacture of *x*-ray films by 7½% during the current year. This to meet the present increased demand of 76% (since the year 1947), with at the moment a disastrous acute shortage in the home market, requires no further astonished remarks from me. The Board of Trade letter goes further and states that according to the Ministry of Health records only one hospital has suffered from the present disastrous shortage of *x*-ray films. They conclude by saying that the position is being watched. No, 7½% increase will not do, but such is the continued toll of slow-moving officialdom and bureaucracy.

Surely here is an opportunity for a Government seeking new channels for export to expand rapidly the film industry and export, not only the 40% quota of films now going abroad, but perhaps greatly increase this figure, provided they meet first the needs at home. The industry backed by the Government could expand their plant quickly and so help the country in its present financial difficulties.

As one of the pioneers to introduce mass miniature radiography into this country I feel sure that to establish mass radiography as a form of economy is in itself largely a false economy and would have a very limited application in routine radiography owing to the shortcomings of the miniature film. For instance, it would be wrong to expect to detect, say, a very early osteomyelitis of a vertebra on a mass miniature film, but it could be used to record the rate of passage of a barium meal through the alimentary tract; not, however, for picking up fine detail such as minute ulcers in the stomach or duodenum which are sometimes barely detectable even on large-scale films.

Certainly it has its application and limitations in ordinary routine chest work. It seems to me that, as it has now become a wide practice in the Health Service for staff and also for emigrants going abroad to have routine *x*-ray examinations of chests, these people could quite easily be examined by mass radiography and if necessary go to centres for this purpose, and so again economizing in the number of mass radiographic machines in use. Subject to correction and according to available information, two Colonies only are using mass miniature radiography. Of the Canadian emigrants apparently 2,000 per month are mass radiographed. The Australians, approximately 7,000 per month, are also mass radiographed, except where disease of the lungs is known to be present, or in miners and others of similar occupation. South Africa and New Zealand, however, still insist on large-size films.

The time is now ripe for a deputation from one of our active radiological societies to visit the Board of Trade and enlighten them.—I am, etc.,

London, W.1. NORMAN P. HENDERSON.

L-*Nor*adrenaline as a Vasoconstrictor

SIR,—I was very much interested to read the article by Dr. H. C. Churchill-Davidson (December 29, 1951, p. 1551). I have used *nor*adrenaline in about 10 cases—mostly gross hypotension after surgical operations in extremely ill patients. In one case only I used it after hexamethonium bromide; this also responded so well that I have reason to believe that *nor*adrenaline and not methedrine is the answer to the dangerous fall of blood pressure which one sometimes gets after the administration of hypotensive drugs. On the other hand, I am inclined to stick to methedrine for fall of blood pressure to a low level under spinal analgesia, because of its ready means of administration and prompt results. Moreover, to maintain the blood pressure at a satisfactory level requires an infusion needing constant supervision and a very careful watch on the blood pressure.

The condition of the chest is one of the difficulties which appeared to me of real practical importance when using *nor*adrenaline in dealing with hypotension in elderly people. It has been often necessary to continue the infusion drip for 24 to 48 hours, though at a slower rate, to get a sustained rise in the B.P. level, and in these cases the patients get a chest condition with bubbling and rattling throughout. I would like suggestions from others on this point. However, I am convinced personally that it gives a slow but sustained rise in the blood pressure as opposed to prompt but transitory actions of methedrine, etc. On the other hand, the complexity of administration and the danger that the drug, if injected as opposed to infused, might kill the patient at once may for some time keep this valuable drug in the background in comparison with the others in common use. May I in this connexion put forward a suggestion that the manufacturers supply ampoules containing 2 or 2.5 ml. and not 4 ml.? In most hospitals the intravenous infusions are carried out from bottles containing 540 ml. of blood, saline, glucose, etc., and only 2 ml. or often 2.5 ml. *nor*adrenaline solution is given, the rest being wasted. The second dose from the open ampoule does not produce good results at all.—I am, etc.,

Manchester. RASHBEHARI GHOSE.

Placing Lymph for Vaccination

SIR,—Professor Robert Cruickshank (January 26, p. 212, and February 2, p. 268) does not say anything about getting vaccination lymph on to the skin. This is important for the inexperienced doctor. He might find himself trying to vaccinate a person without a blower or with one that does not work. The fact that some do not work is guessed from the fact that Pye's *Surgical Handicraft* describes a home-made one—a teat from a baby's bottle. In case one has no blower the following method is good enough. The ends of the tube are broken off cleanly and the lymph shaken down to the end. By applying this end to the site enough lymph can be easily deposited without having to blow by mouth. Only a very small amount is necessary.—I am, etc.,

Heath Hayes, Staffs. P. J. O'BRIEN.

POINTS FROM LETTERS

Penicillin and Colds

Dr. ERNEST JONES (Elsted, Sussex) writes: Those who vaunt the abortive influence of penicillin with colds would do well to record also the sequelae. Recently I used a nasal insufflation of penicillin and sulphathiazole three times in the first 24 hours, and at the end of the next day all symptoms had disappeared. I thought I had come across the real magic and prepared to spread the good news. But wait. Four or five days later the symptoms returned without any detectable reinfection, and I was in for one of the most miserable attacks for years, with several days in bed. Those viruses that had eluded the penicillin extorted an ample revenge for their slain brethren.

KING GEORGE THE SIXTH

"Our Most Illustrious Doctor" *

Four times within not much more than half a century the nation has mourned the death of a much-beloved sovereign. During the previous 63 years the throne had only one occupant; Queen Victoria reigned for so long that she came to be regarded as a permanent institution rather than a mortal being. Edward VII and George V lived out, the one almost the Psalmist's span, and the other slightly beyond it. George VI might have looked forward to many years of happy and useful reign. No English sovereign has died in his fifties since the Stuarts, who were short-lived. The average age at death of our sovereigns since George I is 73. On the other hand, during the 800 years which separate Alfred the Great from Queen Anne, no king or queen lived to be 70, and only seven out of the 46 of them reached the age of 60; and the average age at death was 44. The gradual prolongation of human life covers kings as well as their subjects.

An added poignancy is given to the passing of George VI because of the troubled and catastrophic events of his time. When he opened his first Parliament the Speech which he delivered from the Throne promised measures of slum clearance, the improvement of housing, meals for boys and girls attending industrial centres, and the lowering of the age at which the blind were to receive pensions. The threat of war certainly was hanging over Europe, but at home all seemed set for social betterment, a trim passage to the Welfare State. This prospect must have rejoiced the King's heart because of that unusual experience of the working conditions of the people which had earned him the title of "the industrial Prince." But the tragic interruption of the war came before he had reigned for three years, and although the war itself in some respects quickened the pace of social reform it brought about also such impoverishment as postponed indefinitely the realization of the brighter hopes which had been entertained.

"Real Work and Merit"

Against such a background a king with more showy gifts and more dominating personality might have played a more dramatic part, but possibly a more disastrous one for his country. This quiet domestic King, who on the eve of his 41st birthday came unexpectedly into this overwhelming inheritance, was well matched with his hour. The late Viscount Dawson of Penn, whose last appointment was to the headship of their medical household after the abdication of Edward VIII, wrote in March, 1937, to Sister Black, who had nursed George V, "The King and Queen are doing very well; they are basing themselves on real work and merit—and not on flairs."

People who were growing accustomed to a world in upheaval turned with relief to the King and his family, glad to feel that their titular head was someone like themselves—not a pompous emperor nor a swaggering dictator but one who preferred simple things, who smiled at the same jests, took pride in the same small achievements, claimed no particular genius to separate him from the common man, found his chief satisfaction in the home circle, and was, like his father, but not so like some previous occupants of the throne, the embodiment of themselves. He continued the pattern of life of George V. Archbishop Lang noted on receiving his first letter from the new King that his signature might have been taken for his father's. He was the same plain, direct, unassuming man. The industrial worker with whom he had talked during his hundreds of visits to factories, the boys with whom he had camped in summer holidays, the sailors with whom he had served in the first World War, found in him someone none the less kingly because he had the common touch.

It certainly seems as if the English people like a king who is a good family man. Even if they do not all practise the same virtues themselves they expect to find the example in their crowned heads. And so it has happened that the Throne is now more broadly based on popular affection and respect than ever it has been in the past. The hostility with which the Throne was regarded by not inconsiderable sections of the population in times gone by found no expression at all during the late reign. On the other hand, sycophancy, that unpleasant growth of courts, could not flourish in the presence of this modest and unpretentious ruler, so obviously unassuming and retiring, nor of his friendly and unaffected queen.

King George VI was not trained for the throne. He was not brought up, as he is reported once himself to have said, to be "palace minded." In fact, until his accession, he lived mostly in small houses. The worst training for a king is in the gilded cage where the heir apparent is imprisoned. King George when Duke of York took his full share of the duty and discipline which are imposed upon the general body of citizens—more so than most indeed, because, again like his father, his training was in the Royal Navy. He went to Osborne as a cadet, and then to Dartmouth, and afterwards came his service in the war of 1914–18. The service was interrupted by illness, but it included the Battle of Jutland. "In the *Collingwood*," he wrote, "[we] saw a good deal more than some of the other

*The form of toast given at dinners of London University schools.

ships, and we fired more than they did; but we were not hit at all, which was lucky, though we were straddled several times. One shell dropped over the fo'c'sle, missing us by inches."

The Industrial Prince

Towards the end of the war he served for a time in the Royal Air Force during its early period of organization, and then came the academic interlude of Cambridge, where he lived the life of the ordinary undergraduate, studying civics, commercial geography, and history, to which, when he became interested in industrial affairs, was added economics. His close acquaintance with industry began when he was made President of the Industrial Welfare Society. The idea behind that society as a means of bringing employers and workmen together was that of the Rev. Robert Hyde, who had worked for 15 years among the people of Hoxton and brought his experience to the Ministry of Munitions during the war. When he founded the society he secured the Duke of York as much more than an honorary president. The Duke at that time was a young man of 24, and it is reported that when asked to lead the enterprise he made the condition that there should be "none of that damned red carpet." He visited factories all over the country —150 of them in five years. The purpose was to explain employers and employed to one another. Particular stress was laid on physical training in industry, for which the help of the British Medical Association was sought. His greatest personal service to the country up to the time of his accession was given through that society. It represented a new departure in royal progresses, because, as Hector Bolitho says in his biography of the King, up to that time, although the Royal Family were noted for benevolence and had given their names to innumerable civic institutions, charities, and public services, there had been no personal link between them and the great masses employed in industry and transport, on whom, after all, the very life of the country depends.

The same idea of bringing classes together was behind the Duke of York's camps. As Duke of York, and for one year as King, he camped for the summer holidays with a company of boys, half of whom were drawn from public schools and half from industrial areas. In the course of 15 years something like 7,000 boys were his guests and shared with him the rough-and-tumble, the freedom and improvisation of camp life. Other like causes claimed his interest, such as the National Playing Fields Association. An organization with which he was closely identified was the British Empire Cancer Campaign. He presided over the annual meeting of that body at the House of Lords only a fortnight before his accession, and on that occasion mentioned the sympathy of his family with all work on the cancer problem, especially the interest taken in it by his father and mother and by his grandfather, Edward VII.

In 1933 he opened the International Paediatrics Congress, the first to be held in Great Britain, and reminded the assembly that there were people living who remembered the foundation of the first hospital for children. "Speaking as a father," he voiced the gratitude of parents far and wide. "Take care of the young and the country will take care of itself."

Another of King George's distinctions was as a traveller. Here again he followed the pattern set by his father. It is difficult to say which of them saw most of the British Commonwealth; both of them visited all the Dominions and other parts of the Empire as well. George V looked upon Empire tours for his sons as a part of their education, as they had been his own, much as the grand tour of the Continent had been to the "milords" of the eighteenth century. Both the late King and his father knew Britain overseas far better than any sovereign had known it before, and both of them appealed to the imagination of the peoples they encountered, white, or black, or brown, in much the same way.

His record as King, both during the war years and since, has been amply recalled in the daily press. If his interest in hospitals and medicine did not find so many outlets as his father's, it was none the less deep and sincere. Two occasions on which that interest was manifested in a special degree were his attendance at the celebrations of the 400th anniversary of the second founding of St. Bartholomew's Hospital in 1946 and the opening of the new building of the National Institute for Medical Research at Mill Hill in 1950. He became Patron of the British Medical Association within a few weeks of his accession. The speeches of princes on public occasions are usually formal and colourless. "As tedious as a king," says Dogberry. But King George, as might have been expected from a man of his methodical and painstaking nature, was said to make his own revisions and improvisations, sometimes continuing to revise until the moment of delivery. Up to the time he ascended the throne he had delivered over five hundred speeches in public.

Unfortunately he suffered from a disabling speech defect, inherited from his ancestors of the House of Brunswick—one of the most unhappy afflictions that can befall a man called to high office. It was the more grievous in view of the fact that broadcasting had made it possible for the voices of rulers and statesmen to be heard all round the world. With the help of an Australian speech therapist he made heroic efforts to overcome the disability, and, although his speech to the end remained slow, his later platform utterances and broadcasts were in marked contrast to his earlier ones, and showed how far he had succeeded in conquering the impediment.

The King's Illnesses

The King's life was chequered by frequent illness. He was a man of frail constitution, but with a real determination to make the best of it. The

testimony of his doctors was that he was an admirable patient, willingly submitting to irksome restrictions and co-operating completely in all measures of treatment. His various illnesses were never allowed to cause more than a minimum of interference with his duties. While he was a naval cadet at Osborne he had a severe attack of pneumonia. Soon after the beginning of the first world war, during his service in the Navy, he had severe dyspeptic symptoms and was taken from Scapa Flow in a hospital ship to Aberdeen. He went back again to play his part in the battle of Jutland, where he was second in command in the fore turret of his ship, but afterwards he returned to shore for less exacting duties, and eventually he was operated on in 1917 for duodenal ulcer. In the early part of his reign he had a severe attack of gastric influenza, which caused the abandonment of a number of engagements, including the opening of the Birmingham Hospitals Centre.

A more serious illness developed in 1948. In the late November of that year a bulletin announced that the King was suffering from obstruction to the arterial circulation in the legs. The bulletin, which was signed by the late Sir Maurice Cassidy, Sir Thomas Dunhill, Professor J. R. (now Sir James) Learmonth, and Sir John Weir, added that the strain of 12 such years of reign had appreciably affected his resistance to physical fatigue. After some days of rest, a reassuring bulletin stated that there had been an improvement in the general health of the King, which was an important factor in re-establishing the arterial circulation to the feet. It was also stated that the restoration was being encouraged by appropriate medicinal and physical means, but that it was a slow process, extending over a period of months. In the middle of December the re-establishment of the circulation in the left leg and foot had reached a stage sufficient to permit some activity, but in the right leg and foot it had been less rapid, so that only strictly limited activity, confined to indoors, could be undertaken. In March, 1949, the operation of lumbar sympathectomy was performed with a view to improving the blood supply in the right foot. The surgeons were Professor Learmonth and Professor (now Sir) J. Paterson Ross. The King made a good recovery, and a prolonged convalescence was undertaken in order to secure the continuation of the natural process of forming a collateral circulation which had been encouraged by the operation.

The King undertook a number of public engagements in 1950 and the early part of 1951, but those who saw him realized that he was evidently still a very sick man. Disease of the lung was first mentioned in a bulletin signed by Sir Daniel Davies, Sir Horace Evans, Dr. G. (now Sir Geoffrey) Marshall, and Sir John Weir, on June 1, 1951, when it was stated that the King was confined to his room with an attack of influenza, and that there was a small area of catarrhal inflammation in the lung. In the early autumn a visit of specialists to Balmoral was followed by the King's sudden return to London to undergo treatment not possible in the Highlands. A later bulletin stated that structural changes had developed in the lung. On September 23 an operation for resection of the lung was performed; the following eight medical men were in attendance: Sir Daniel Davies, Dr. Geoffrey Marshall, Sir Robert Young, Sir Thomas Dunhill, Mr. C. (now Sir Clement) Price Thomas, Dr. R. Machray, Sir Horace Evans, and Sir John Weir. On October 8, after daily bulletins, it was announced that His Majesty continued to make satisfactory progress and that no further regular bulletins would be issued.

In his broadcast on the following Christmas Day, in a voice that bore witness to the weakness of his respiratory system, the King paid tribute to "the faithful skill of my doctors, surgeons, and nurses," and he sent a special donation to Westminster Hospital as a token of his gratitude to the medical and nursing staff who had gone from that hospital to the palace. The honour of knighthood was conferred upon two of the medical men concerned—Sir Clement Price Thomas and Sir Geoffrey Marshall.

"A True King"

The late King admirably filled the throne vacated by his brother. He maintained the constitutional tradition of the monarchy, and his strong sense of public duty and high standard of family life were an inspiration at a time when that sense of duty was becoming confused and those standards had been lowered. The deaths of sovereigns, as of other great persons, are the occasion invariably for much uncritical praise; then after a time there succeeds a more balanced estimate, and sometimes the satirists and detractors get to work (as in the case of Queen Victoria) in their not always laudable attempts to re-write history. The enduring monument to the late King's reign is the firm establishment of the constitutional monarchy in the hearts and minds of the people. He was a true King and a good man.

Chrysostom wrote in his *Tasks of Kingship*, "The clearest mark of a true king is that he is one whom all good men can praise without compunction, not only during his life but even after his death."

A MESSAGE OF SYMPATHY

After the announcement of the King's death in his sleep on February 6 the following telegram was sent to the Private Secretary at Buckingham Palace:

"The President and Members of the British Medical Association are deeply grieved at the death of their Beloved Patron the King and humbly offer heart-felt sympathy to Her Majesty the Queen and all members of the Royal Family. E. A. Gregg, Chairman of Council."

This telegram, addressed to the Chairman of the Council of the British Medical Association, was received in reply on February 8:

"I am sincerely grateful for your message. Please assure all those for whom you speak that I deeply value their kindness and sympathy. Elizabeth R."

Obituary

Dr. ALBERT VICTOR JOHN RUSSELL died at his home in Birkenhead on January 14. Born at Strabane, in Northern Ireland, in 1899, he was educated at the Methodist College, Belfast. He studied medicine at Dublin, and graduated M.B., Ch.B., B.A.O. in 1921, taking the L.M. (Rotunda) in the same year. He served as house-physician and house-surgeon at the Chester Royal Infirmary, house-surgeon at the Shropshire Orthopaedic Hospital, and house-physician at the Queen's Hospital for Children, Hackney. Subsequently he was a medical officer with the Cunard White Star Company and much of his service was in the old *Mauretania*. He entered general practice in Birkenhead in 1934 and was an assistant physician at the Birkenhead and Wirral Children's Hospital from 1934 to 1942 and physician from 1942 to 1948. He served in the Army during the last war, and later, following his recall because of shortage of doctors in Birkenhead, he joined the Home Guard and served as medical officer to the 4th Cheshire Battalion. From that time onwards he took an ever-increasing interest in medico-political matters and was a member of the panel committee and local medical war committee. He was elected chairman of the administrative committee of the Birkenhead Executive Council in 1947, vice-chairman of the Birkenhead and Wirral Division of the B.M.A. in 1950, secretary of the Birkenhead local medical committee in 1949, and a member of the Representative Body of the B.M.A. and a member of the Conference of Local Medical Committees in 1949. All these appointments he held until the time of his death. Dr. Russell was an able and conscientious worker on behalf of his colleagues, and was an extremely well-informed and active supporter of the British Medical Association. He was a classical scholar, and in addition a man of many and diverse interests, widely read on a variety of subjects. He is missed by many friends among his colleagues and patients in Birkenhead.—R. W. L. P.

Dr. WALTER HENRY POLLARD, who was in general practice in Birmingham for upwards of fifty years, died at his home in Birmingham on January 29, aged 84. He studied medicine at St. Bartholomew's Hospital, where he won the senior entrance scholarship in science. After qualifying in 1894 and graduating M.B. a year later, he worked in and near London for some years before settling in practice in Bearwood, near Smethwick. Later he moved to Edgbaston, where he remained until his death. Dr. Pollard was well known in the district not only because he was a respected general practitioner but because of his keen interest in local affairs. He was elected a member of the Smethwick Borough Council many years ago, and in due course he became a justice of the peace, and eventually mayor of Smethwick just after the first world war, during which he had served as medical officer to the auxiliary military hospital at Lightwoods Hall. Dr. Pollard was one of the first members of the Birmingham panel committee and was a vice-president of the Birmingham Medical Institute. Later he became chairman of the Birmingham Central Division of the B.M.A. (1931–2) and president of the Birmingham Branch (1936–8). For several years in the nineteen-thirties he represented his Division at the Annual Meeting. Although he gave up general practice about ten years ago, Dr. Pollard retained his post as chairman of No. 5 medical recruiting board in Birmingham until 1948.

Dr. MAX HARTMANN, the distinguished Swiss chemist, for long associated with Ciba Ltd., of Basle, died on February 2. Born at St. Gallen, Switzerland, in 1884, Max Hartmann obtained his doctorate in chemistry at Munich, shortly afterwards joined the Ciba laboratories, and, after a brief interval again at Munich, settled in 1915 for good with Ciba, where he entered the pharmaceutical department, then in its early stages of development. His subsequent researches led to the production of many valuable medicinal products, of which "coramine" is probably the most widely known. Dr. Hartmann became an honorary member of the Swiss Chemical Society after long service as treasurer, received an honorary doctorate in medicine from the University of Basle and in technical science from the Swiss Polytechnical School, and became a member of the board of management of Ciba. He played a prominent part in the establishment of the Swiss Academy and very actively interested himself in the work of other foundations, such as those for chemical, biological, and medical scholarships, and the Swiss Tropical Institute. His last visit to London was to take part, with Sir Henry Dale and other distinguished men, in the opening ceremony of the Ciba Foundation for the Promotion of International Co-operation in Medical and Chemical Research, when he paid tribute to "the long line of great British research workers, past and present." Those who knew Max Hartmann will not forget the kindliness and the homely character of this man of rich personality. In his department there was no place for pettiness and jealousy, and, directing it with tolerance and understanding, Dr. Hartmann always gave the fullest credit and support to all his co-workers. His fine judgment and shrewd common sense made his advice highly valued beyond his department and beyond Ciba, not only in scientific matters and administration, and especially in the selection of staff, but also in the world of art. His aged mother and two children survive him.—G. E. W. W.

Dr. GRAHAM RENSHAW died after a short illness on January 13 at the age of 79. Educated at the Leys School, Cambridge, he graduated M.B., Ch.B. at Manchester University in 1899 and proceeded M.D. in 1914. Soon after qualifying he joined his father, Dr. Herbert Smith Renshaw, in practice in Sale, and when his father retired in 1916 he took complete charge. Graham Renshaw was a man of wide interests. A well-known naturalist, he wrote articles for a number of natural history journals, and from 1922 to 1924 owned and edited a monthly magazine called *Nature Lover*. At his home in Sale he kept a miniature zoo containing a variety of animals, birds, and fish. In 1940 he retired from general practice and went to live in Hale, but he continued his work as medical referee for a number of insurance companies till shortly before his death. He was of a friendly disposition and will be greatly missed by all who knew him. He is survived by his wife and daughter.—R. H.

The death occurred on January 11 of Dr. JOHN LEO MCSWEENEY at the early age of 48. He was the youngest son of Eugene McSweeney, of Cork, a prominent Irish educationist and sometime lecturer at University College, Cork. Leo McSweeney was educated at University College, Cork, and graduated M.B., B.Ch., B.A.O. at the National University of Ireland in 1926 in spite of being handicapped by the early onset of the illness from which he suffered throughout his professional career and from which he eventually died. The first five years after qualification he spent as a ship surgeon, and he then settled in general practice first at Ferndale in South Wales and finally, in 1938, in Birkenhead. Owing to his chronic ill-health his outside activities were limited, though he was keenly interested in sport, but he derived great consolation from his religion, being a very prominent member of the Roman Catholic community in Birkenhead. The esteem in which he was held by his patients was evidenced by a very large congregation at his requiem. He is survived by his widow, Sheila, daughter of the late Dr. T. McKelvie, of Cardiff, and his brother Dr. Christopher J. McSweeney, who is in consultant practice in Dublin.—E. G. W.

We record with regret the death at Newcastle-upon-Tyne on January 20 of Dr. ELDRED CURWEN BRAITHWAITE. He was born in Cumberland in 1885, and was educated at the University of Durham, where he graduated M.B., B.S. with first-class honours in 1909, taking the M.R.C.S., L.R.C.P. in the same year. In 1910 he took the D.P.H., and three years later proceeded M.S. He was elected F.R.C.S.Ed. in

1922. Dr. Braithwaite entered the Colonial Medical Service in 1911 and retired in 1944. For most of this period he served in West Africa, becoming senior specialist in Nigeria. He took part in the Cameroons campaign in 1914–16, was mentioned in dispatches, and received the thanks of the Secretary of State for the Colonies. He was appointed O.B.E. in 1936 and promoted C.B.E. in 1947.

Dr. H. R. MacK. Ferguson writes: A pupil of the late Rutherford Morison, Braithwaite specialized in surgery, and his work in Owassi, Nigeria, and other up-country stations, work of which I have first-hand knowledge, was of a very high order and of the greatest value to Africans, whom he served with devotion, and to the Colonial Government. Braithwaite was at his best when called upon to tackle some difficult surgical problem under almost impossible conditions. His cheery humour was the delight of his friends and a splendid tonic to countless patients.

Medical Notes in Parliament

Dentists' Bill in the Lords

In the House of Lords on February 5, Lord WOOLTON moved the second reading of the Dentists' Bill. He explained that the Bill was introduced to grant dentists the status and dignity of a self-governing profession, to regulate the admission of foreign and Commonwealth dentists to the dental register, and to provide for the training of ancillary dental workers. A new General Dental Council was to be set up, composed of 34 members, all but four being registered dentists. In addition, six members of the General Medical Council would act as members on the General Dental Council when matters concerning dental education were discussed. The visiting of dental schools, the registration of dentists, and disciplinary procedure would be transferred to the General Dental Council. The Bill gave a new right of appeal to the judicial committee of the Privy Council against a decision to remove a dentist's name from the register in the same way that that appeal had been given to a doctor in the Medical Act, 1950.

The only new principle introduced in the Bill empowered the General Dental Council to establish classes of ancillary dental workers. The public dental service for expectant and nursing mothers and young children was in serious need of additional manpower. In December, 1951, the equivalent of just over 700 full-time dental officers were employed on this work, whereas an adequate dental service for children would require some 2,800 full-time dentists. The number of dentists on the register was likely to increase, but slowly. Just before the war the annual entry into the profession was about 340; during the last five years between 600 and 650 students had entered dental schools each year. Expansion of the schools was costly and would be slow, and at the present rate of intake the number of 10,000 practising dentists in England and Wales would not be greatly increased. Meanwhile the public would have an insufficient dental service. The Bill would enable the General Dental Council to give official recognition to oral hygienists, but provided they should only work under supervision of a registered dentist. The Government was considering whether ancillary dental workers, able to undertake the extraction and filling of teeth, as in New Zealand, should also be introduced. The Bill provided that the Dental Council should arrange for the training and subsequent employment of a number of persons whose work would include extraction and filling, and that the Ministry of Health and Secretary of State for Scotland should be empowered to give financial help towards the cost of this experiment. A two-year training was envisaged, and after the first batch of dental workers had been employed for a year the council was to report on the experiment. If the results justified such action the council was authorized to proceed, in conjunction with the Privy Council, to draft regulations establishing such a class as ancillary workers.

Not Enough Dentists?

Lord TEVIOT said he did not agree that there were not enough dentists in the country to provide reasonable treatment for adult patients. When a moderate charge had been introduced for the supply of dentures the drop in the number of patients was most noticeable, and he believed that the new charge of up to £1 would make a large reduction in the number of patients seeking treatment. There was no doubt that the schools and children were alarmingly short of treatment and inspection. He contended that a dental surgeon rather than an ancillary worker should do the filling of a child's permanent teeth, but at the moment it barely offered a living for the dental surgeon to become a children's dentist. Parliament had to offer an inducement of a reasonable return for such work.

Lord WEBB-JOHNSON declared himself in favour of encouraging the training of dental nurses, provided the limits of their activities were narrower than was laid down in the Bill. The dental nurse should not be permitted to interfere with living tissues. The auxiliary workers could be made technically competent, but would not have sufficient training to make them competent to form a diagnosis, especially during the eruption of the second teeth. Lord AMULREE endorsed the plea for the foreign refugee dentists at present working in this country, and Lord MANCROFT hoped that the misgiving concerning ancillary workers would disappear. He dissented from the description of the auxiliary workers as partially trained. It was not right to describe a hospital sister as partially trained. She was trained to do her own job.

Lord HADEN-GUEST said the London County Council at present ought to have 66 dentists but had only 38. The deficiency in dental establishment amounted to a disaster which could not be made up. He was not convinced that, because of the charges now to be made for various dental services, dentists would go back to the school dental service. He believed that the setting up of a service of ancillary dental workers under the personal supervision of dentists would be valuable.

The Bill was read a second time without a division.

Milk for 5-year-olds

Mr. WILLIAM IRVING regretted on January 31 that the Ministry of Food and the Ministry of Education could not agree about supplying milk to schoolchildren. The Ministry of Food denied further responsibility when children reached the age of 5 and, if the education authorities who became responsible for the education of children at that age had no places in the schools for the children, those children could not get free milk. About 15,000,000 gallons of milk were consumed by schoolchildren each year (about twice the pre-war figure), and this was a good investment. The problem ought to be a simple one—if children at the age of 5 could not be provided with education they should be provided with school milk in the same way that schoolchildren were provided with it during the holidays. Mr. KENNETH PICKTHORN, for the Ministry of Education, agreed that the matter deserved attention. It was not true that the Ministry of Education became automatically responsible for children on their reaching the age of 5. The subject they were discussing was a gap of a few weeks, or at most of not many months. Most children were in attendance at school before they were 5 years and 1 month old. If the Minister allowed children who were not practically in attendance at school to be put nominally on the register in order to receive milk it would not only be a breach of the Statute but also a fraud upon the Ministry of Food. To continue the child's ration book so that until it was absorbed in the school machine it could receive cheap milk, orange juice, and the rest would have meant giving benefits worth 3d. and 4d. a week instead of 10d. worth of milk, and could not be done by administrative fiat. The simple truth was that neither the Ministry of Food nor the Ministry of Education had been able to find a means by which the thing could be done. If it were done, the effort and expense would be out of proportion to the benefits secured.

Industrial Injuries

In the House of Commons on February 4 Mr. BARNETT JANNER drew attention to the grave loss of life and health from industrial injuries and diseases. He said the report of the Ministry of National Insurance for November, 1951, gave the number of awards of Industrial Deaths Benefit as about 3,000 in 1949 and approximately the same in 1950. The position might deteriorate. Increased mechanization was being introduced in mining and quarrying, and machinery accounted for most of the accidents. He asked the Government to see that there was constant consultation between the departments which dealt with this problem. Sir PETER BENNETT, replying for the Ministry of Labour, said prevention of industrial accidents was primarily a matter for employers and employed. The Ministry always urged managements to appoint men specially devoted to safety work, and was arranging for special lectures to be given by factory inspectors in universities and technical schools. The setting up of an additional committee on the subject would be a waste of time.

Prescription Charge Exemption

Mr. H. F. C. CROOKSHANK on February 5 declined to exempt old-age pensioners from payment of 1s. for their prescriptions unless they already received a public assistance grant or were otherwise unable to meet the charges without hardship.

Pensions for Cancer.—About 1,400 awards of pension have been made in respect of disablement or death from cancer accepted by the War Office as attributable to or aggravated by service in the armed Forces during the 1939–45 war and since. Information in respect of the 1914–18 war is not available.

Schools for Epileptics.—Miss F. HORSBRUGH is anxious to increase the provision for epileptic children in special schools. Approved-school boys and girls under 16 who suffer from major epilepsy are placed in special schools. When they cannot be so placed they usually have to be discharged to their own homes.

Suicides.—Suicides in prison in England and Wales were 10 in 1949, 3 in 1950, and 8 in 1951.

Poliomyelitis.—In 1948–51 35.5 cases of poliomyelitis per 100,000 of the population were notified in Scotland and 41.6 per 100,000 in England and Wales.

Hearing-aids and Wigs.—During one year the issues were 93,454 and 9,750 respectively. The estimated cost excluding overheads was £329,000 and £124,000.

Hospital Reports.—In Scotland hospitals are not authorized to charge for copies of reports taken from their records.

Crematoria.—No authorizations to build crematoria were given in the years 1945 to 1949; one was given in 1950 and three in 1951. There are 59 crematoria in England, Scotland, and Wales.

Universities and Colleges

UNIVERSITY OF ABERDEEN

Dr. Ian Milne Richardson has been appointed Lecturer in Social Medicine in the University.

UNIVERSITY OF MANCHESTER

Professor Walter Schlapp has been appointed Dean of the Medical School for 1952.

Dr. E. L. Patterson and Dr. F. A. Langley have been appointed Senior Lecturers in Anatomy and in Special Pathology, respectively, and Dr. Basil Wolman, previously Assistant Lecturer in Child Health, Honorary Clinical Lecturer from December, 1951.

Miss Rose Heilbron, Q.C., will deliver the Margaret Ashton Memorial Lecture on "Women in the Professions" at the University on Friday, March 21, at 5 p.m.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The following were admitted to the Membership of the College on February 1: R. C. Desai, E. G. Fox, J. P. R. Rees.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending January 26 (No. 4) and corresponding week 1951.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1952					1951				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	27	1	14	1	2	48	5	21	2	1
Dysentery	547	38	72	2		706	76	147	5	
Encephalitis, acute	6	0	1	0		6	1	0	0	
Enteric fever:										
Typhoid	2	0	0	0	0	4	2	0	1	1
Paratyphoid	10	2	1 (B)	0		4	0	4 (B)	0	
Food-poisoning	90	8		0		143	6		0	
Infective enteritis or diarrhoea under 2 years				10	9				13	20
Measles*	2,837	41	287	143	61	15,930	2210	182	37	90
Meningococcal infection	37	3	11	1	2	60	4	25	0	
Ophthalmia neonatorum	30	4	9	0		11	1	8	0	
Pneumonia†	836	38	294	10	1	3,572	179	613	122	120
Poliomyelitis, acute:										
Paralytic	18	0	1	0	2	20	1	1	1	
Non-paralytic	9	0				7	0			
Puerperal fever‡	207	28	14	1	2	102	9	16	2	1
Scarlet fever	1,293	89	233	36	34	955	44	172	27	45
Tuberculosis:										
Respiratory			154	37				143	29	
Non-respiratory			19	8				25	4	
Whooping-cough	2,573	86	318	152	75	5,023	464	661	15	112

DEATHS § in Great Towns	1952					1951				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	0	0		0	0	*0*	0	*0*	0	0
Dysentery	0	0		0			0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0		0		*0*	0	*0*	0	
Infective enteritis or diarrhoea under 2 years	13		4	0	1	*12*		*4*	0	0
Influenza	33	4		2	0	*1,239*	122	*81*	50	78
Measles		0		0	0		0	*1*	0	0
Meningococcal infection		1					1	*2*		
Pneumonia	303	41		7	8	*790*	113		49	44
Poliomyelitis, acute	0	0			0	*3*	0			0
Scarlet fever		0		0	0		0	*0*	0	0
Tuberculosis:										
Respiratory	176	26	30	2	13	*216*	29	*40*	9	15
Non-respiratory		4	3	1	0		1	*3*	1	3
Whooping-cough	1	0		0	0	*10*	0	*0*	0	0
Deaths 0–1 year	269	31	30	14	24	*317*	40	*45*	12	20
Deaths (excluding stillbirths)	6,345	964	754	135	202	*9,648*	1448	*1100*	318	459
LIVE BIRTHS	7,564	1164	840	217	413	*7,358*	1228	*957*	274	401
STILLBIRTHS	194	15	31			*199*	35	*22*		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
‡ Includes puerperal pyrexia.
§ See "Census Changes" overleaf.

Vital Statistics

Infectious Diseases

The chief features of the returns of infectious diseases in England and Wales during the week ending January 26 were increases in the number of notifications of whooping-cough by 224, dysentery by 113, and scarlet fever by 82.

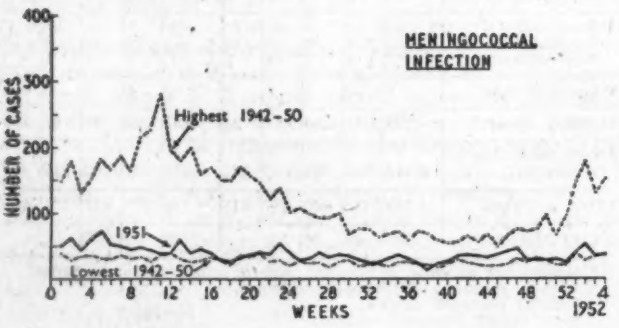
The largest increases in the incidence of whooping-cough were Yorkshire West Riding 62, Gloucestershire 38, and Durham 37. The only variation of any size in the local trends of scarlet fever was an increase of 42 in Essex. The number of notifications of measles have been practically constant for the last three weeks, and the notifications during the week reviewed were only 9 more than in the preceding week. The only large fluctuations in the local trends of measles were a decrease of 104 in Cheshire and an increase of 66 in Staffordshire. The notifications of diphtheria were 5 more than in the previous week. Almost two-thirds of the notifications of diphtheria were returned by three counties —Lancashire 6, Yorkshire West Riding 5, and Staffordshire 5.

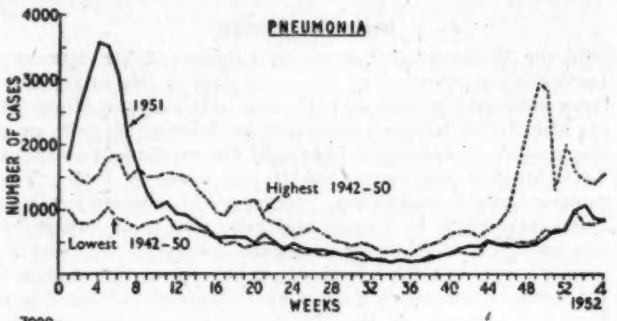
Notifications of acute poliomyelitis were 7 fewer for paralytic and 1 fewer for non-paralytic cases than in the preceding week. The largest returns were Lancashire 5 (Manchester C.B. 2); Gloucestershire 3 (Cheltenham M.B. 2); Kent 3; Yorkshire West Riding 3.

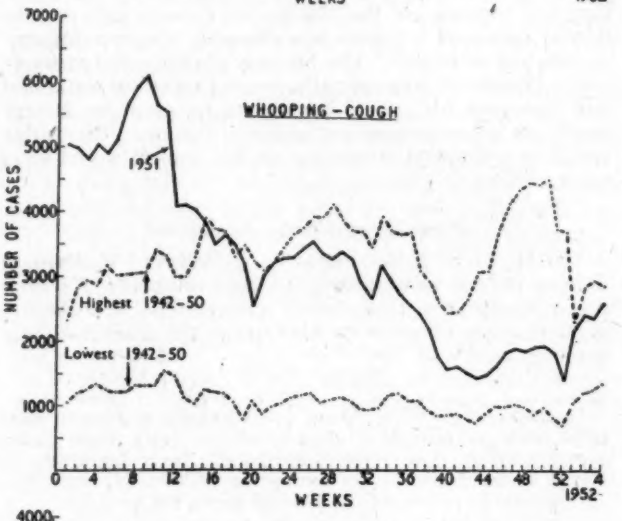
For the fourth consecutive week a rise has been recorded in the number of notifications of dysentery. A further 65 cases were notified in the outbreak in Norwich C.B., an increase of 13 on the total of the preceding week. The outbreak in this city began during the week ending November 24 with 25 notifications. In the next two weeks 117 and 200 cases were notified, and a steady fall occurred in the next five weeks to reach 31 cases in the week ending January 12, but in the succeeding two weeks a small rise has been reported. In the past ten weeks 788 cases have been notified in this city. Other large returns during the week reviewed were Lancashire 64 (Lancaster M.B. 11); Middlesex 44 (Willesden M.B. 17); Surrey 43 (Malden and Coombe M.B. 35); Devonshire 39 (St. Thomas R.D. 14, Exeter C.B. 13); London 38; Kent 31 (Beckenham M.B. 16); Yorkshire West Riding 29; Southampton County 26 (Portsmouth C.B. 24); Warwickshire 17 (Coventry C.B. 11); Denbighshire 15 (Ruthin R.D. 15).

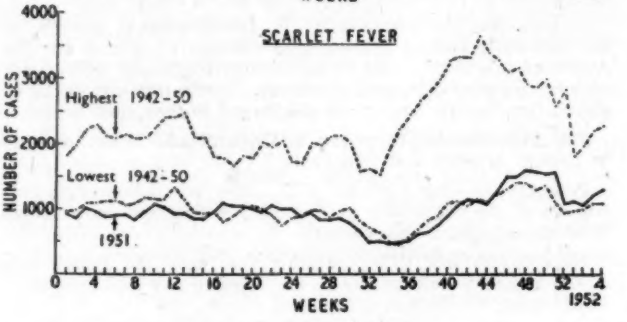
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported during the nine years 1942–50 are shown thus - - - - - - - -, the figures for 1951 and 1952 thus ————. Except for the curves showing notifications in 1951 and 1952, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Week Ending February 2

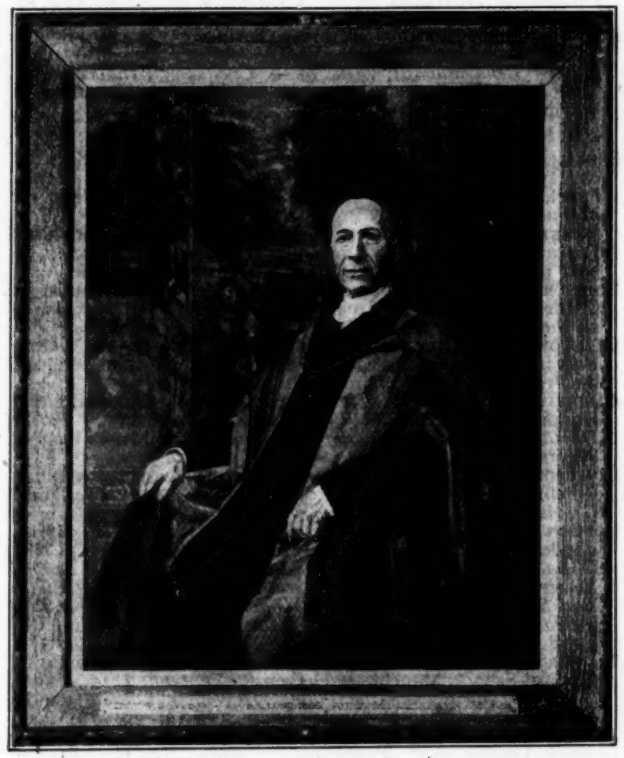
The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,320, whooping-cough 2,652, diphtheria 24, measles 3,386, acute pneumonia 1,005, acute poliomyelitis 25, dysentery 490, paratyphoid fever 6, and typhoid fever 5.

Census Changes.—Population figures obtained at the 1951 census show that there are now 160 great towns (population over 50,000) in England and Wales instead of 126, and 17 principal towns (population over 30,000) in Scotland instead of 16. Therefore the 1952 figures for deaths, births, and stillbirths in these countries, published weekly in our Table, cannot be accurately compared with those for 1951, which are printed in italics. The 160 great towns in England and Wales have a population about 10% higher than the 126.

The Hospital for Sick Children in Great Ormond Street, London, W.C.1, has started its own periodical, which appears twice yearly, in June and December, at 7s. 6d. an issue. *Great Ormond Street Journal* publishes only the work of present or past members of the staff, and includes a sizable review of "laboratory diagnosis of virus and rickettsial infections" in its first issue, and of "paper chromatography" in its second (December, 1951), as well as shorter articles on such subjects as abdominal pain in childhood, and numerous case reports and special investigations. The journal is produced by H. K. Lewis and Co., Ltd.

Medical News

Silvester Traced.—Immediately after a request (*Journal*, January 26, p. 227) for information about the possible existence of a portrait of Dr. Henry Robert Silvester, Dr. F. C. Doble kindly telephoned to say that for many years one had hung in the house of the late Reverend Paul Silvester, of Land's End and Penzance. He suggested it might have passed to Mr. J. Allon Tucker, of Bath, a brother-in-law of Silvester, and through Mr. Tucker's kind permission we have been able to photograph the portrait,



Cyril Howe Studios, Bath

which is here reproduced. Silvester, the son of Dr. T. H. Silvester, was born in 1829, qualified M.R.C.S. in 1853, M.B. in 1854, and M.D.(London) in 1855. His paper on "A new method of resuscitating still-born children, and of restoring persons apparently drowned or dead" appeared in the *British Medical Journal* of July 17, 1858, at page 576. Silvester's method consists in placing the patient in the supine position, putting the arms firmly over the head to raise the ribs, and keeping them there until air ceases to enter the chest; the arms are then brought down to the chest and pressed against it for a second or so after air ceases to escape. This formula is repeated 16 times in a minute. In 1861 Silvester became honorary medical assistant to the Royal Humane Society, which awarded him the Fothergill gold medal in 1883. He died in 1908.

East African Blind.—A campaign for the 150,000 blind people in East Africa is being launched simultaneously in this country and in the East African territories this month. A committee headed by Sir John Hathorn Hall, until lately Governor of Uganda, has been set up by the British Empire Society for the Blind to make an appeal to firms with interests in East Africa. In Kenya and Uganda committees have been formed with the assistance of the Governments, and they are planning to raise £75,000 to provide funds for medical research into the causes and incidence of blindness and eye diseases, the provision of new or extended schools for the blind, demonstration teams, and aftercare facilities. A committee is also being formed in Tanganyika, where a sum of £24,000 will be required to carry out a similar scheme. The British Empire Society for the Blind is co-operating with the Zanzibar Voluntary Welfare Society to raise a fund for blind welfare work. The money raised by the United Kingdom committee will help forward the plans made by the four territories.

Careers in the Colonial Service.—The Stationery Office has just published, at 3s. 6d., a useful guide to *Appointments in His Majesty's Colonial Service* which gives full information on all the many occupations, medical, nursing, veterinary, scientific, etc., the Service includes. Conditions of service, pay, eligibility, methods of selection, and further training after selection are described for all the different territories.

North of England Obstetrical and Gynaecological Society.—The annual general meeting of the society was held in Manchester University on Friday, January 25. The following officers were elected for 1952: president, Mr. P. Malpas; treasurer, Dr. C. H. Walsh; general secretary, Dr. T. E. Lennon; reporting secretary, Mr. S. Bender. Dr. B. Dodd described four cases of recurrent placenta praevia; Dr. T. Fitzgerald described a case of pregnancy in a septate uterus simulating angular pregnancy; and Dr. H. Doberman described two cases of malignant ovarian tumours in pregnancy. Mr. S. Bender read a paper on twin pregnancy.

Prizes for Amateur Medical Films.—A prize of 100,000 francs (£100 approx.), which might be divided, and several other prizes are offered by *La Presse Médicale* for the best 16-mm. silent or talking films made by an amateur for medical or surgical teaching. No film subsidized by or made by a laboratory or a firm is eligible, and both cinematic quality and teaching value will be judged. For full information, and entries, send to Secrétariat de La Presse Médicale, Librairie Masson, 120, Boulevard St. Germain, Paris 6e, before March 1. Prizes will be presented in the Large Theatre of the Faculté de Médecine de Paris on April 4 at 8.30 p.m.

The "Pink Reports" are Back.—Most of the Industrial Health Research Board reports, familiarly known as "Pink Reports," have been out of print for some years. The demand for some of them has, however, continued, and it has now been decided that these should be reprinted. Three titles are now on sale again at the Stationery Office. No 34, *A Contribution to the Study of the Human Factor in the Causation of Accidents*, by E. M. Newbold; No. 61, *The Nervous Temperament*, by Millais Culpin and May Smith; and No. 77, *Fatigue and Boredom in Repetitive Work*, by S. Wyatt and J. N. Langdon (assisted by F. G. L. Stock). Others will follow in due course.

Liberian Tropical Medicine Institute.—The American Foundation for Tropical Medicine, in co-operation with the Harvard Medical School, in 1944 carried out a very successful investigation into all phases of human trypanosomiasis in Liberia, and this led Mr. Harvey S. Firestone, jun., to create a fund of $250,000 enabling the foundation to build a permanent institute for research in tropical diseases. The institute has been set up at Harbel, which is about 50 miles inland in Liberia and the site of one of the two large Firestone rubber plantations. On January 11 it was opened by Dr. Thomas Mackie, the foundation's president, and the director is Dr. Thomas C. Burch; a small staff is now in residence and research work is beginning.

Foreign Decoration.—The King of Iraq has conferred the Insignia of the Order of Al Rafidain, Class III, on Lieutenant-Colonel W. R. M. Drew, O.B.E., R.A.M.C., in recognition of valuable services rendered by him as Professor of Medicine at the Royal College of Medicine at Bagdad.

Emergency Bed Service: Applications and Admissions.—During the seven days ending February 11 the number of applications, made by doctors to the London Emergency Bed Service for admission of patients was 1,209, of whom 85.52% were admitted.

COMING EVENTS

Eugenics Society.—The Galton Lecture arranged for February 15 has been postponed until April 4.

Course on Frustration and Fulfilment.—The Davidson Clinic, Edinburgh, will hold an Easter school from March 26 to April 1. Lectures will be given by Dr. W. Rushforth, Dr. W. P. Kraemer, and other members of the staff; the guest speaker will be Dr. Margaret Lowenfeld. Tickets for the course cost £3 3s., and those wishing to attend are requested to apply as soon as possible, not later than February 28, to the secretary, 58, Dalkeith Road, Edinburgh, 9, who will supply full details.

Conference on the Mentally Handicapped.—The National Association for Mental Health is holding its annual conference at Bedford College, Regent's Park, N.W.1, from March 27 to 29. An inclusive ticket admitting to all sessions costs £1 5s. 6d. A full programme may be obtained from the conference secretary, 39, Queen Anne Street, W.1.

Institute of Almoners.—The annual general meeting will be held on March 28 at 6 p.m. in the Great Hall, B.M.A. House. Miss Hornsby-Smith, M.P., will address the meeting.

Lay Course in Tropical Hygiene.—The annual course for laymen will be held at the Ross Institute this year from July 14 to 18 inclusive. The course is arranged so that the morning sessions provide a continuous course on malaria and its control, and in the afternoons other tropical diseases and problems are dealt with, such as hookworm, bilharzia, nutrition, housing and sanitation, and protection against heat. It is intended for such people as estate and mine managers and their assistants, missionaries, and all those whose work in the Tropics makes them responsible for the health and welfare of others. There is no fee for the course. The names of those proposing to attend should be sent as soon as possible to the organizing secretary at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, from whom full details may be obtained.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Saturday

BIOCHEMICAL SOCIETY.—At London School of Hygiene and Tropical Medicine, Keppel Street, W.C., February 16, 11 a.m., 305th meeting. Symposium: *"Lipid Metabolism."*

Monday

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—February 18, 8.30 p.m., *"The Surgery of the Heart and Great Vessels,"* First Lettsomian Lecture by Mr. R. C. Brock.

Tuesday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., February 19, 5.30 p.m., *"Chemical Aspect of Antibiotics,"* by Sir Robert Robinson, O.M., F.R.S.

CHADWICK TRUST.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, London, W., February 19, 2.30 p.m., *"How Improvement of Housing is Promoted in Belgium,"* Chadwick Public Lecture by Dr. J. Goossens (Brussels).

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—February 19, 5.30 p.m., *"Parapsoriasis and Poikilodermia Atrophicans Vasculare,"* by Dr. P. D. Samman.

INSTITUTE OF PHYSICS: ELECTRONICS GROUP, 47, Belgrave Square, London, S.W.—February 19, 5.30 p.m., *"The Mechanism of Radiation-Induced Chromosome Mutation,"* by Dr. J. M. Thoday.

MIDDLESEX COUNTY MEDICAL SOCIETY.—At North Middlesex Hospital, Silver Street, Edmonton, N., February 19, 3 p.m., general meeting; demonstration of clinical cases, etc.; 4.45 p.m., *"A Syndrome Resembling Haemophilia Due to a Circulating Anticoagulant,"* by Dr. I. S. Collins.

SOUTH WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, Wandsworth Common, London, S.W., February 19, 8.30 p.m., *"Analgesics and Sedatives,"* by Dr. H. C. Stewart.

WEST END HOSPITAL FOR NERVOUS DISEASES, 40, Marylebone Lane, London, W.—February 19, 5.30 p.m., neurological demonstration by Dr. N. G. Hulbert.

Wednesday

CAMBRIDGE UNIVERSITY.—At Department of Physical Chemistry, Free School Lane, Cambridge, February 20, 12 noon, *"Some Aspects of the Physical Chemistry of Amino-acids, Peptides, and Proteins,"* by Professor John T. Edsall (Harvard University).

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—February 20, 5.30 p.m., *"Mycology—Treatment of Fungus Infections,"* by Dr. R. W. Riddell.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., February 20, 4.30 for 5 p.m., *"Radiotherapy of the Genito-Urinary Tract,"* by Dr. J. R. Ivey.

LONDON UNIVERSITY.—At Institute of Education, Malet Street, London, W.C., February 20, 5.30 p.m., *"The Physics and Chemistry of Molecular Interactions at Interfaces, with Special Reference to Haemolysis, Lipo-protein Associations, Fat Emulsion Systems, and the Possible Mode of Action of Some Biologically Active Molecules,"* special university lecture by Dr. J. H. Schulman.

ROYAL MICROSCOPICAL SOCIETY, Tavistock House South, Tavistock Square, London, W.C.—February 20, 5.30 p.m., film: *"Behaviour of Cells of a Chemically Induced Rat Tumour in Tissue Culture,"* to be introduced by Dr. Charity Waymouth.

Thursday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., February 21, 5.30 p.m., *"Recent Light on Mammary Function,"* by Professor H. D. Kay, D.Sc., F.R.S.

DONCASTER MEDICAL SOCIETY.—At Danum Hotel, Doncaster, February 21, 7 for 7.15 p.m., annual dinner and dance to be held in conjunction with Doncaster Division, B.M.A.

EDINBURGH CLINICAL CLUB.—At B.M.A. Rooms, 7, Drumsheugh Gardens, Edinburgh, February 21, 8 p.m., *"Some Observations on the Use of the Antibiotics,"* by Dr. D. M. F. Batty.

GLASGOW UNIVERSITY MEDICO-CHIRURGICAL SOCIETY, The Union, University Avenue, Glasgow.—February 21, 7.30 p.m., address by Professor Dugald Baird.

●INSTITUTE OF CHILD HEALTH, Hospital for Sick Children, Great Ormond Street, London, W.C.—February 21, 5 p.m., *"Patent Ductus Arteriosus and Pulmonary Stenosis,"* by Mr. T. Holmes Sellors.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool.—February 21, 8 p.m., ordinary meeting. *"Myasthenia Gravis,"* by Professor Andrew Wilson.

LONDON UNIVERSITY.—Institute of Education, Malet Street, London, W.C., February 21, 5.30 p.m., *"The Physics and Chemistry of Molecular Interactions at Interfaces, with Special Reference to Haemolysis, Lipo-protein Associations, Fat Emulsion Systems and the Possible Mode of Action of Some Biologically Active Molecules,"* special university lecture by Dr. J. H. Schulman.

MANCHESTER MEDICAL SOCIETY.—At Large Anatomy Theatre, Medical School, Manchester University, February 21, 4.30 p.m., *"The Art of Feeling the Pulse,"* University Lecture on the History of Medicine by Dr. W. Evan Bedford.

ROYAL ARMY MEDICAL COLLEGE.—At Lecture Theatre, John Islip Street, London, S.W., February 21, 5 p.m., *"The Neurology of the Cervical Spine,"* by Dr. W. Russell Brain, P.R.C.P.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—February 21, 5 p.m., *"Carotid-Cavernous Aneurysms and Pulsating Exophthalmos,"* Hunterian Lecture by Professor S. P. Meadows.

ROYAL MEDICAL SOCIETY.—At Assembly Rooms, Edinburgh, February 21, 8 p.m., annual ball.

ROYAL SOCIETY, Burlington House, Piccadilly, London, W.—February 21, 10.30 a.m., *"Excitation and Inhibition,"* discussion to be opened by Professor J. C. Eccles, F.R.S. (University of Otago).

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—At 26, Portland Place, London, W., February 21, 7.30 p.m., ordinary meeting. Symposium: *"Insecticides,"* to be presented by Professor P. A. Buxton, F.R.S.

ST. ANDREWS UNIVERSITY.—At Lecture Theatre, Materia Medica Department, Medical School, Small's Wynd, Dundee, February 21, 5 p.m., *"The Management of Massive Gastro-duodenal Bleeding,"* by Professor F. H. Bentley.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—February 21, 4.30 p.m., lecture-demonstration in neurology.

UNIVERSITY COLLEGE, Physiology Theatre, Gower Street, London, W.C.—February 21, 4.45 p.m., *"Mitochondria and Biological Oxidations and Phosphorylations,"* by Dr. A. L. Lehninger (Chicago).

WREXHAM AND DISTRICT CLINICAL SOCIETY.—At Wynstay Arms Hotel, Wrexham, February 21, 7.30 p.m., *"Comparisons in Reproduction,"* by Mr. Owen Jones.

Friday

FACULTY OF RADIOLOGISTS.—At Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., February 22, 2.15 p.m., Radiodiagnosis Section Meeting. *"The Lateral Position in Chest Tomography,"* by Dr. George Simon; *"Carcinoma of the Middle Lobe Bronchus,"* by Dr. G. Brian Locke. (Date changed from February 15.)

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—February 22, 5.30 p.m., *"Reticuloses,"* clinical demonstration by Dr. P. D. Samman.

●INSTITUTE OF DISEASES OF THE CHEST AND INSTITUTE OF CARDIOLOGY.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., February 22, 5.30 p.m., *"Medical Aspects of Patent Ductus Arteriosus and Coarctation,"* by Dr. Graham Hayward.

INSTITUTE OF PHYSICS: INDUSTRIAL RADIOLOGY GROUP, 47, Belgrave Square, London, S.W.—February 22, *"The Chemistry of Radiographic Film Processing,"* by Mr. A. J. Axford.

MANCHESTER MEDICAL SOCIETY.—At Large Anatomy Theatre, Medical School, Manchester University, February 22, 4.30 p.m., *"Steroid Hormones and Behaviour, Experimental and Clinical Aspects,"* by Professor Klein (Strasburg).

OXFORD UNIVERSITY.—At Magdalen College, Oxford, February 22, 5 p.m., *"The Neurophysiological Basis of Mind,"* Waynflete Lecture by Professor J. C. Eccles, F.R.S.

ROYAL SANITARY INSTITUTE.—At Y.M.C.A. Hall, Talbot Road, Port Talbot, February 22, 10 a.m., papers: *"Housing Progress and Development at Port Talbot,"* by Mr. G. V. Griffiths, A.M.I.C.E.; *"The Health and Local Authority Services and the Population Problem,"* by Dr. D. J. Davies; *"Housing Repair Difficulties,"* by Mr. G. A. Morgan. Afternoon visits.

UNIVERSITY COLLEGE, Physiology Theatre, Gower Street, London, W.C.—February 22, 5.30 p.m., *"Some Recent British Contributions in the Field of Pharmaco-therapeutics,"* by F. Bergel, D.Sc.

APPOINTMENTS

Dr. G. A. Macgregor has been appointed an Official Member of the Legislative Council of the Colony of Aden.

GORDON, E. H., M.D., D.P.H., Assistant County Medical Officer and Medical Officer of Health, Urban Districts of Mansfield, Woodhouse, and Warsop, Nottinghamshire.

GRAHAM, H. A., M.D., F.R.C.S.Ed., Medical Officer (Consultant), Fitness Centre, Bridge of Earn Hospital, Perthshire, Eastern Regional Hospital Board (Scotland).

HERBERT, GLADYS M., M.R.C.S., L.R.C.P., D.P.H., Medical Officer of Health, Llandilo Health Division, and Assistant County Medical Officer, Carmarthen.

HORTON, E. H., M.B., B.Ch., T.D.D., Deputy Medical Superintendent (S.H.M.O. Grade), Glan Ely Hospital, Cardiff, Welsh Regional Hospital Board.

KERSHAW, J. B., M.B., D.P.H., Assistant County Medical Officer, and District Medical Officer of Health, East Suffolk.

MAIR, ALEX., M.D., D.P.H., Senior Lecturer, Department of Public Health and Social Medicine, University of St. Andrews; Consultant and Medical Adviser to the Almoner Service, Eastern Regional Hospital Board, Scotland.

PIERCE, J. W., M.D., M.R.C.P., D.M.R.D., Consultant Radiologist (Diagnostic), The Hospitals for Diseases of the Chest, London.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD.—*Senior Registrar in Psychiatry to Bristol Clinical Area*, K. W. Aron, M.B., Ch.B., D.P.M. *Paediatric Registrar, Southmead Hospital, Bristol*, N. T. Jaco, B.M., B.Ch., M.R.C.P., D.C.H.

WATT, DAVID C., M.D., D.P.M., Consultant Psychiatrist, St. John's Hospital, Stone; Royal Bucks Hospital; and Stoke Mandeville Hospital, Aylesbury, Bucks.

WILSON, J. NOEL, Ch.M., F.R.C.S., Consultant Traumatic and Orthopaedic Surgeon, Cardiff United Hospital and Welsh Regional Hospital Board.

BIRTHS, MARRIAGES, AND DEATHS

DEATHS

Begbie.—On January 31, 1952, at a hospital, Glasgow, Ralph Stockman Begbie, M.D., M.R.C.P.Ed., D.P.H., D.T.M.&H., of 23, Carrick Road, Ayr, late of Hong Kong.

Boden.—On January 29, 1952, at 2, Methuen Park, London, N., John Smedley Boden, O.B.E., M.B., B.S.

Bodington.—On February 5, 1952, at a nursing-home, Winchester, Arthur Eaton Bodington, M.D., aged 87.

Cormack.—On January 31, 1952, at Mossgiel, Felpham, Sussex, Harry Slater Cormack, M.C., M.B., F.R.C.S.Ed., Lieutenant-Colonel, I.M.S., retired.

Fischer.—On January 26, 1952, at Dunmore, Bo'ness, West Lothian, Nicolai Christian Fischer, M.B., Ch.B.

Fraser.—On February 7, 1952, at a nursing-home, Hove, Charles Fraser, M.D., D.P.H., of 5, The Drive, Hove, Sussex, aged 79.

McLaren.—On January 29, 1952, at his son's home, Felixston, Zululand, Natal, South Africa, Donald James McLaren, M.B., Ch.B.

Miller.—On January 26, 1952, at Cairo, William Sloan Miller, M.B., Ch.B., Surgeon Commander, R.N.

Moore.—On January 28, 1952, William Struthers Moore, M.B.E., M.D., of 7, Church Hill, Purley, Surrey.

O'Neill.—On February 2, 1952, Charles Sefton O'Neill, O.B.E., M.D., D.P.H., of Inglenook, Hale, Cheshire, aged 70.

Pearson.—On January 31, 1952, at 87, Bickenhall Mansions, London, W., John Sidney Pearson, M.D., aged 75.

Scott-Dickson.—On January 29, 1952, at 9, Bruce Road, Dundee, Margaret Scott-Dickson, M.B., Ch.B., D.P.H., formerly of St. Andrews.

Strahan.—On January 28, 1952, at Winchester, Stuart Séguin Strahan, M.R.C.S., L.R.C.P., of Staceys, Bentley, Hants, late of Hong Kong.

Thornton.—On January 29, 1952, at Shepherds Hill, East Knoyle, Salisbury, Wilts., Gerald Earl Thornton, M.B.E., M.B., B.Ch., aged 68.

Wallis.—On January 26, 1952, at Jersey, Channel Islands, Preston Richard Wallis, L.S.A.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Analgesia for Urethral Instrumentation

Q.—*What is the best way of rendering the male urethra analgesic before instrumentation? Are there any special dangers to be guarded against? Please suggest suitable sources of further information on this subject.*

A.—Analgesia of the male urethra is obtained by instilling the chosen solution in sufficient quantity to distend the anterior urethra, and then massaging it back into the posterior urethra. The best syringe to employ is a rubber-bulb type (Canny Ryall or Riches's urethral syringe). After the injection of 1 oz. (28.4 ml.) of the solution the urethra is closed by compression between the left thumb and forefinger or by a penile clamp, and with the fingers of the right hand the fluid is coaxed back into the posterior urethra by gentle but firm strokes. Little should escape when the compression is released. If the whole process is repeated after 5 minutes analgesia is more complete.

Many solutions are in use: cinchocaine hydrochloride 1/1,000 is very satisfactory, as is procaine hydrochloride 4%. Cocaine hydrochloride with sodium bicarbonate in ½% solution freshly made is also employed; stronger solutions are sometimes toxic and may be dangerous. Many of the newer analgesic agents can be used, but it is advisable to get to know the effects of one. Care should be taken not to inject air, and if the urethra has been injured by previous attempts at instrumentation some other form of anaesthesia is preferable. Full details of the methods are given in *Cystoscopy and Urography*, by Macalpine (John Wright and Sons, Bristol, 1949), and in *Essentials of Urology*, by Ainsworth-Davis (Blackwell Scientific Publications, Oxford, 1950).

Fits for Diagnosis

Q.—*For the last 10 months a girl of 7 years has suffered from curious convulsive "fits," invariably induced by her bowel action. When entering the fit she strokes and plucks her hair, fixes her eyes glassily, licks her lips, emits a grunt, and moves her arms slowly about, with her fingers constantly flexing and "pill-rolling." She is pale throughout. There is no attempt to fall, bite her tongue, or froth at the mouth. She has an enormous appetite, and if thwarted will seek scraps even from the floor. She crams her food into her mouth, filling the whole cavity, but it is all digested when it comes through. She was successfully treated for threadworms some six months ago. There is no loss of weight. What is the differential diagnosis, and how should she be treated?*

A.—Assuming that there are no abnormal physical signs, the account of the attacks suggests that the patient is suffering from either psychomotor epilepsy or spontaneous hypoglycaemia due to excess secretion of insulin by an adenoma of the islets of Langerhans. With the first, a full family history and an electroencephalogram might be helpful in diagnosis together with a therapeutic trial of phenobarbitone and sodium phenytoin. It seems important to exclude the possibility of hyperinsulinism in this patient, and the critical test is an estimation of the blood sugar level during an attack. If the level is below 50 mg.% and if the patient recovers rapidly following intravenous administration of glucose, it is very probable that an insulin-secreting islet-cell tumour is present in the pancreas. The fact that she has an "enormous" appetite is rather in keeping with this second diagnosis.

Gastric 'Flu?

Q.—*I have a patient who has had 'flu five times in the last year. The duration is one or two days; intestinal signs predominate, with temperature and odd pains in the head and limbs. Recovery is completely without asthenia in four days. Blood smear is normal. He is incapacitated from his work for three days and resents this. What is the likely diagnosis? Is there any method of prevention?*

A.—It would be tempting to give this syndrome the label "gastric 'flu," but such a diagnosis is to be deprecated, for too often it masks some specific intestinal infection like bacillary dysentery or salmonella food-poisoning. The question does not state the age of the patient, what the "intestinal signs" are, whether catarrhal symptoms are present, or at what season of the year these attacks occur. The occurrence of "influenza" in the summer months should raise suspicion of a tuberculous infection. If headache and catarrhal symptoms are prominent, the activation of a chronic sinusitis may explain the symptoms. On the other hand, if this is an intestinal infection, and the patient has been abroad, the possibility of chronic bacillary or amoebic dysentery might be considered. It would be advisable in any case to have the chest radiographed and to send a specimen of faeces to the public health laboratory for bacteriological examination, preferably during an attack. If the condition is a recurrent febrile catarrh a course of mixed stock or autogenous vaccine in the "off season" may be of some prophylactic value.

Acrocyanosis

Q.—*What are the latest views on the treatment of acrocyanosis? In spite of wearing warm stockings and gloves a female patient of mine, aged 36, is getting worse. Is there any useful treatment short of lumbar sympathectomy? Are peripheral vasodilators, such as "priscol," worth trying?*

A.—As the question suggests, lumbar sympathectomy is usually a completely successful treatment for acrocyanosis, though it is, of course, justifiable only in the most severe cases. The benefit which one would theoretically expect from peripheral vasodilators is unfortunately not always by any means obtained in practice. Nevertheless, these drugs are worth a trial, and their effectiveness should certainly be investigated in any individual case before surgical operation is undertaken. Priscol, nicotinamide, and hexamethonium should all be given a trial, the dosage being cautiously increased to the limit of tolerance. Unfortunately, it usually happens that the dose which is effective in improving the condition of the legs produces other circulatory symptoms which make the drug useless in practice. At all events, the margin between the effective dose for acrocyanosis and the dose which produces a troublesome fall in blood pressure is a small one; individual response is decidedly variable, so that careful adjustment of the dose for each patient is the only method.

Marbled Skin

Q.—*Can anything be done to mask a very noticeable "marbled skin" in a girl aged 12? The condition is most pronounced on her chest and legs, and the appearance causes her unhappiness.*

A.—Marbled skin, or livedo reticularis, is a normal phenomenon, the blue areas representing parts of the skin where the capillary circulation is sluggish. Accentuation of the pattern is often due to cold and may often be improved if the subject is kept warm. Some accentuated cases appear to be due to an anatomical abnormality in the distribution of skin arterioles, and in such a case treatment is not likely to be effective.

Formerly, livedo reticularis was held to be sometimes an indication of tuberculosis, syphilis, rheumatism, hypothyroidism, and chronic debilitating illnesses. It is doubtful whether these views are widely held nowadays, but they are worth bearing in mind in the severe case. Improvement of the general health and adequate exercise may be sufficient to convert a disfiguring case of livedo into one well within normal limits where the appearance will no longer trouble the patient.

Bilateral Renal Tuberculosis

Q.—*A woman of 45, who had a nephrectomy for renal tuberculosis six years ago, has still occasional haematuria with dysuria and frequency of micturition. Tubercle bacilli have now been isolated from catheter specimens of urine. (1) Should a full urological examination in hospital be advised to establish the exact site and extent of the lesion, or (2) should streptomycin or P.A.S. (para-aminosalicylic acid) be given without more ado—if so, in what dosage?*

A.—Diagnosis should always precede treatment, and the site and extent of the lesion can be diagnosed only by full urological investigation. If there is a detectable renal lesion on pyelography it is unlikely that streptomycin and P.A.S. will do more than retard its progress, but under their cover a partial nephrectomy might be possible if the lesion is localized.

If no lesion can be demonstrated on the pyelogram it is possible that the urine can be made tubercle negative by a course of treatment; the usual dose is 0.5 g. of streptomycin twice daily up to at least 50 g. and about 2 to 3 g. of P.A.S. three to five times a day. The general regime for any tuberculous patient should be followed.

Emetine and Scorpion Stings

Q.—*One of my dispensary attendants claims that emetine hydrochloride, 1 gr. (65 mg.) intramuscularly, will relieve the pain of a scorpion sting at once, if given within three hours of stinging. Is there any foundation for this treatment?*

Q.—The idea that emetine might relieve the pain of a scorpion sting probably arose from the older statement by Simpson that local application of a paste of ipecacuanha was effective. There is little evidence that either is of much value. Injection into the wound of a local analgesic is usually very effective, and serious cases should be given the appropriate antivenin.

NOTES AND COMMENTS

Vitamins during Lactation.—Dr. MAVIS GUNTHER (London) writes: Might I make a small addition to your expert's answer about vitamins during lactation ("Any Questions?" January 26, p. 229)? The answer given may leave the impression that cod-liver-oil tablets given to mothers during lactation are of little use. The mother needs to take extra vitamin D not because she is likely to be depleted of that vitamin by its loss in milk, for, as your expert says, that is very little; in lactation, however, she is giving out much calcium, and she will be in negative calcium balance unless she herself has enough vitamin D to enable her to absorb sufficient calcium for her increased need.

OUR EXPERT writes: The vitamin D added to our margarine ration is probably adequate to prevent a negative calcium balance even in lactation, but the use of cod-liver-oil tablets would seem to be amply justified as an additional safeguard.

Speedy Hypnotic.—In the answer to this question ("Any Questions?" January 12, p. 118) the name sodium propylallylbarbiturate was wrongly used for quinalbarbitone (sodium propylmethylcarbinyl allylbarbiturate).

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 4499. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs.
ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 4499. TELEGRAMS: *Britmedads, Westcent, London.*
MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 4499. TELEGRAMS: *Medisecra, Westcent, London.*
B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.